PUBLISHED EVERY MONDAY

Croplife®

WEST MARKETING EDITION

With Added Regional Circulation to the West Marketing Segment

TOTAL CIRCULATION OVER 9,070 COPIES EACH WEEK

BPA Member, Business Publications Audit

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL MANUFACTURER, FORMULATOR AND DEALER

Published by The Miller Publishing Co., Minneapolis, Minn.

Vol. 6 | Publication at Minneapolis, Minn. Accepted as Controlled Circulation | OCTOBER 19, 1959 | Subscription Rates: $5 for 1 year, $9 for 2 years | No. 42

USDA to Close Florida Screwworm Breeding Facilities

Progress in Eradication Program Given as Reason for Shutdown

WASHINGTON—The facilities located at Sebring, Fla., for production of flies used in the screwworm eradication program will be closed and the dispersal of sterile flies will be discontinued in the southeastern states by Nov. 14, the U.S. Department of Agriculture and the Florida Livestock Board announced.

Setting of this closing date was made possible by progress in eradicating the screwworm from the Southeast—a cooperative effort by the U.S. Department of Agriculture, the Florida Livestock Board, and other southeastern states.

The buildings and equipment will be maintained on a standby basis but all flies used as breeding stock will be destroyed. If it is necessary to resume operations at the Sebring laboratory, stock for a new fly colony can be obtained from a USDA research laboratory at Kerrville, Texas. An office will remain open at Sebring and samples of worms submitted for identification by livestockmen and others will be processed as usual.

Program officials report that no screwworms have been found in Florida since June 17, and that no cases have occurred in South Carolina, Georgia, or Alabama this year. Prior

(Turn to SCREWWORM, page 8)

NAC MEETING

★

Oct. 21-23 are the dates for the 26th annual meeting of the National Agricultural Chemicals Assn. at the French Lick-Sheraton Hotel, French Lick, Ind. Full report of convention in next issue of Croplife.

Ill-Will Toward Pesticides Result of Ignorance, WACA Speakers Say

ATTEND MEETING—Attending the recent insect symposium in Washington were: (left to right) Dr. George R. Ferguson, president, Geigy Agricultural Chemicals, division of Geigy Chemical Corp., Yonkers, N.Y.; Dr. Hans Gysin, director of pesticide research, Geigy Chemical Corp., Basle, Switzerland; Dr. Paul Mueller, Basle, Switzerland, Nobel prize winner in medicine in 1948 for the discovery of DDT; Dr. E. F. Knipling, director, entomological research, Agricultural Research Service, USDA, Beltsville, Md., and Dr. A. W. A. Brown, head, Department of Zoology, University of Western Ontario, London, Canada. Dr. Mueller and Dr. Gysin were attending the symposium—"Research Progress on Insect Resistance" at the Mayflower Hotel Oct. 7-8. Dr. Ferguson, Dr. Knipling and Dr. Brown were on the program for the symposium. (For story, see Croplife Oct. 12, page 1.)

SAN MATEO, CAL.—That unfavorable public attitudes toward the use of pesticides and related chemicals must be changed before the agricultural chemical industry will be able to enjoy its greatest potential, was one of the foremost topics for discussion at the 30th annual meeting of the Western Agricultural Chemicals Assn. conducted Wednesday, Oct. 14, at San Mateo, Cal.

The theme of unfavorable public attitudes was approached from a number of points of view. Speakers represented the manufacturing industry, consultants to the trade, and the federal government.

Donald G. Lerch, Jr., agricultural consultant, Washington, D.C., in describing the factors involved in unhealthy attitudes towards pesticides, said that groups most vocal against the use of chemicals are usually greatly misinformed about their value, or are financially prejudiced.

The industry has the responsibility of selling not only to the farmer, but to the public as well, and this responsibility increases with our expanding population, he stated. Explanatory articles and pamphlets are beginning to perform this function, but both the industry and agriculture as a whole need educational leaders.

Trade associations such as the Western Agricultural Chemicals Assn. and the National Agricultural Chemicals Assn. are media through which the industry can work to overcome the resistance of the misinformed public, Robert S. Thompson, president of Thompson-Hayward Chemical Co., Kansas City, told the group.

An understanding of product liability and careful attention to the requirements of USDA regarding product handling and labeling will tend to reduce the hazards of chemicals, and would in effect help to improve public attitudes, other speakers implied.

The responsibility of preparing proper labels on products is greater now

(Turn to WACA, page 21)

First Midwest Entry

Khapra Beetle Found: Quick Fumigation Stops Infestation

CLEVELAND, OHIO—Recent discovery of an infestation of Khapra beetles in the hold of the German freighter "Concordia" at Cleveland marked the first such incident of possible entry of this pest in the Midwest. The insects, mostly in the larval stage, were occupying an area containing the residue of a former shipment of peanuts from Nigeria which had been unloaded at Rotterdam, Holland.

E. B. Fryer, in charge of the USDA plant quarantine work of the Agricultural Research Service at Cleveland, told Croplife that the empty hold was "completely littered" with the pest. "I had never seen anything like it before," he said. "There were some adults, but the bulk of the living bugs were larvae."

The ship was immediately fumigated with methyl bromide, which eradi-

(Turn to KHAPRA BEETLE, page 20)

Responsibilities of a Pesticide Salesman

By ROBERT Z. ROLLINS*
Chief, Bureau of Chemistry
California Department of Agriculture

Usually the question of who is responsible for a pesticide application comes up only when something has gone wrong.

At such a time the farmer may maintain that he can't keep up with the complicated field of pest control or remember the characteristics of all the new chemicals, and that he has relied on the salesman, or someone else for information as to what to do.

The pest control operator may maintain that his job was merely to accept what was delivered to him and to apply the material when and where he was told.

The salesman may maintain that his job was merely to deliver an effective pesticide that is properly formulated and meets its guaranteed analysis.

With each of the three pointing at the other two, for what is each responsible, who is really responsible?

Hundreds of pesticide sales are made each day in California and probably each case presents a little different situation. We are not particularly concerned about the girl clerk in a notions store who sells a package of moth balls, the grocery clerk who rings up sale of a can of fly spray, or the pet store clerk who sells a package of flea powder. There are many kinds of pesticides and many types of pesticide salesmen. While we are particularly concerned with sales of agricultural pesticides for large-scale applications, even these present greatly differing circumstances.

In some cases the farmer has decided what he wanted done, told the salesman or operator just what he wanted delivered and told the operator where and when to apply it. In other cases the farmer has left his pest control problems entirely in the hands of the salesman, or occasionally at the discretion of the operator to do whatever he thought necessary.

So the roles played by farmer, salesman and operator differ greatly in different cases. Obviously respon-

(Turn to RESPONSIBILITIES, page 17)

*Presented at New Pesticides Review for Central California, sponsored by Western Agricultural Chemicals Assn., Fresno, Sept. 10, 1959.

CHET YOUNGBERG (kneeling on right), Oregon State College soils specialist, discusses pumice soils in Ponderosa pine area at the Agro-Forestry Meeting held recently at Pringle Falls, Ore. Horace Cheney, OSC soils department head, shovels while S. P. Gessell, University of Washington (kneeling), looks on. From left to right standing are: Bernard Duberow, Deschutes Research Center; Tom Jackson, OSC soils scientist; Dick Mathews, Atkins Kroll; Carl Berntsen, Deschutes Research Center; Dwight Didzun, Harrisons & Crosfield, and Trevor Steel, American Potash & Chemical Corp.

Agronomists, Foresters Meet in Oregon To Discuss Management, Fertilization

PRINGLE FALLS, ORE. — About 45 fertilizer agronomists and foresters met at Pringle Falls recently to discuss the proper management of ponderosa and lodgepole pine forests. The meeting was sponsored by the Oregon State College and the National Plant Food Institute in cooperation with the personnel of the Deschutes Research Center at Pringle Falls.

"Studies being carried on at Pringle Falls apply to approximately 15 million acres in the surrounding area," stated Carl Berntsen, U.S. Department of Agriculture forester in charge of the Deschutes Research Center. "Our objective in the studies is to obtain maximum wood production. We need to double our present production during the next 40 years if we are to keep up with the present use schedule. Stocked land is now producing a mean annual increment of 150 board ft. per acre. This must be increased to 300 board ft. per acre," Mr. Berntsen added.

Bernard Duberow, research forester at the Deschutes Research Center, discussed management practices, including thinning and pruning, of ponderosa pine. "Ponderosa pine grows in rainfall areas ranging from 10-60 in. annual precipitation and on a wide variety of soils," Mr. Duberow stated. Mr. Duberow said that very few fertilizer studies were underway in the pine area at the present time. "We need to establish some fertilizer studies in the pine area on (1) thinned stands and (2) in seed production areas to see if we can duplicate yield responses that have been obtained in the Douglas fir region."

Chet Youngberg, Oregon State College forest soils specialist, discussed the soils characteristics of the pumice soils which cover a large part of the Pringle Falls area. "The pumice soils have an average pH of 6.4 and are quite low in phosphorus and exchangeable bases. The average organic matter content is about 0.56%. We have gotten an excellent response to nitrogen, phosphorus and sulfur on young pine seedlings grown under greenhouse conditions at Corvallis," Mr. Youngberg stated.

Tom Jackson, Oregon State Soil Scientist, emphasized the importance of multiple plant nutrient use on the pumice soils. "In our studies with alfalfa on these soils, we have found that fertilizer interactions are of vital importance, for example, nitrogen will not be utilized until sulfur is also added and phosphorus is necessary for the proper utilization of nitrogen and sulfur," he stated.

Ed Mowat discussed the importance of thinning stands of ponderosa pine to get the proper amount of stocking per acre. "Studies are now underway to determine the optimum number of trees necessary for maximum production at the various stages of growth under known soil moisture conditions. Numbers of trees in the experiment will vary from 1,000 to 62 trees per acre. On half of these plots vegetation has been removed to determine the effect of vegetation on suppressing optimum growth," Mr. Mowat said. In response to a question from the assembled group, Mr. Mowat stated that if future experiments with fertilizers indicated a need for plant food, the number of pine trees per acre might be increased considerably similar to the increase in the number of corn plants per acre with a good soil fertility program.

Walter Dahms, research forester with the Deschutes Research Center, discussed lodgepole pine management. Lodgepole pine occupies one million acres, or about 18% of the commercial forest lands along the eastern slopes of the Cascades in Oregon. It is cut for lumber and has proven to be a good pulpwood species. "Proper management of this species would produce enough wood to support 15 good sized pulpwood plants," Mr. Dahms said. Good management includes thinning, control of insects and diseases, control of mistletoe, and planting of lodgepole pine in the proper soil-climatic area.

Hardy Glascock, Jr., Western Forestry and Conservation representative, stressed the need of research to control forest losses due to insects, diseases and animals. "Fire used to be our most important forest enemy, but only 5% of the annual losses in raw timber are now caused by fire, whereas 75% of our present losses are due to insects, diseases and animal damage."

Many of the foresters present discussed the need of an animal repellent, preferably a systemic to stop the wholesale destruction of new seedlings of pine by deer, rabbits, groundhogs and other wildlife. Field trips taken by the group added further emphasis to this need, as destruction to young pine seedlings was in evidence in all newly planted areas.

Bill Currier, U.S. Forest Service, after discussing grazing management on pine forest land, showed slides illustrating the use of a new range seeding and fertilizing unit they had used in various areas. "We have found that the use of fertilizer has been essential to obtain proper establishment of grass on new plantings in this area," Mr. Currier stated.

S. P. Gessel and Ed Bailey, research foresters at the University of Washington, reported on the economic aspects of Douglas fir fertilization. Their data indicated that an economic return had been obtained by applying from 100-200 lb. of actual N on site 5 land at Pack Forest, Wash. The cost return ratio tables indicate a maximum return of $3 for every $1 invested, at 3% compound interest. The data indicated that the increased growth rate of fertilized stands can upgrade site and reduce rotation age for pulpwood and sawlog species.

U.S. Borax Announces Two Appointments

LOS ANGELES — Appointment of Virgil O. McCollum as corporate director and E. D. Lemon as assistant director of industrial relations for United States Borax & Chemical Corp. has been announced by James M. Gerstley, president.

Mr. McCollum has served as industrial relations director for the U.S. Potash Co. division at Carlsbad, New Mexico, since 1955. He has been with the company since 1932.

Mr. Lemon joined Pacific Coast Borax Co., predecessor of U.S. Borax, at Boron, Cal., in 1938. His most recent post was that of assistant to the general superintendent of the Boron facility.

Both Mr. McCollum and Mr. Lemon will be stationed at the company's headquarters in Los Angeles.

Mr. Gerstley said the two appointments are in accordance with a management realignment, announced early in September, which replaced the former product divisions with functional departments operating on a corporate-wide basis.

Method of Determining Insecticide Toxicity Revealed

WASHINGTON — A chemical analysis system for determining inhibition of acetylcholinesterase by certain anticholinesterase insecticides was introduced recently by Technicon Controls, Inc., Chauncey, N.Y. The development in automatic wet chemistry instrumentation was announced at the three-day meeting of the Association of Agricultural Chemists convening in the Shoreham Hotel Oct. 12 through 14.

Developed to determine residual potency of highly toxic phosphate ester insecticides, the new cholinesterase bio-assay employs the Technicon AutoAnalyzer®, a system of continuous, automatic chemical analysis that eliminates conventional analytical techniques.

TOO MUCH RAIN

KELSO, WASH.—Indignant farmers and loggers of Cowlitz County have demanded an investigation of "cloud seeding" to increase rainfall in southwest Washington.

County commissioners recently held a hearing on the matter and heard angry charges and explanations on the use of silver iodide generators to open up rain clouds.

Farmers, fruit growers and bulb gardeners angrily claimed their crops were damaged by heavy rains this year and loggers listed expenses for road construction.

The commissioners said they will ask Earl Coe, director of the state conservation department, to hold a public hearing on the cloud-seeding work, possibly in Kelso.

Nematode Called Chief Threat to Lawn Owners

PULLMAN, WASH. — The nematode was nominated here as the pest most likely to become public enemy number one to lawn owners and turf managers.

Dr. Walter Apt, nematologist, Puyallup, Wash., described the life and times of the microscopic worm and its destructive tendencies at the 13th annual regional Turf Conference here. Turfmen from Washington, Oregon, Idaho, Montana and Canada attended.

Dr. Apt, U.S. Department of Agriculture nematologist stationed at WSU's Western Washington Experiment Station at Puyallup, brought the group up-to-date on methods of controlling the little-known pest.

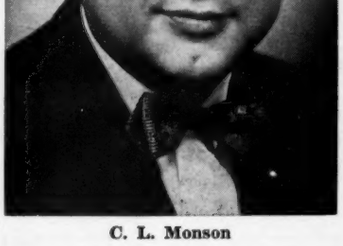
He said the first heavy nematode infestation of turf in Washington was discovered in the Seattle area in 1958. Soil samples taken since then have shown that parasitic nematodes are prevalent in many Washington turf areas.

Dr. Apt pointed out that every acre of cultivated land contains several hundred-million nematodes — some helpful, some harmful. Many are useful in the breakdown of organic matter. The "bad actors" are the parasitic forms that feed on roots and other parts of plants. The result is stunted, deformed and starved plants.

"Grass in nematode-infected turf or lawns," Dr. Apt said, "thins out, takes on a pale sickly look and begins to die out. The symptoms, however, are the same as for a number of other problems including lack of plant nutrients, poor aeration and improper drainage."

Only positive method of diagnosing the presence of the minute pests, Dr. Apt said, is to send soil samples to a nematologist. Such persons are available at WSU's experiment stations at Puyallup and Prosser.

The USDA expert said only known nematode control method at present is in-place sterilization of lawn and turf soils before seeding, and treatment of established turf or grass with a mild fumigant.



C. L. Monson

NEW MANAGER — C. L. (Chuck) Monson has been named to manage the new northwest district sales office for Spencer Chemical Co.'s agricultural chemicals division. The recently-established office has its headquarters at 8401 West Dodge in Omaha, Neb. Mr. Monson joined Spencer in 1948 and has served in a number of agricultural sales positions, including sales representative in the southeast and in Iowa; product sales supervisor; and, prior to his new assignment, manager of national accounts. A native of Wichita, Kansas, he graduated from Friends University in 1941. As manager of the Northwest district, he will supervise a sales area which includes the states of Iowa, Nebraska, Montana, North and South Dakota, Minnesota and Wyoming.

HEAT TREATMENT

BERKELEY, CAL. — A soil heat treatment which kills plant disease organisms but not harmless organisms, has proved effective in experimental disease control of field-grown nursery plants.

The treatment, which involves use of aerated steam at about 140° F., was developed by Dr. Kenneth F. Baker, plant pathologist at the University of California, Los Angeles. It is a part of a general "public health" or disease prevention program designed for the nursery industry.

Previous soil heat treatment involved a 212° temperature. This rendered the soil completely sterile, killing all organisms and leaving a "biological vacuum."

The new method reduces recontamination of the treated soil by disease organisms, which usually occurs in the field from the air or nearby untreated soil. Since competition among soil organisms for available nutritional resources is so great, the reinvading disease organisms have a more difficult time in the soil in which moderate heat treatment has permitted competing non-disease organisms to survive. Antibiotics produced in the soil by the "good" organisms further limit those which cause disease.

Chemicals to Highlight New Mexico Meeting

UNIVERSITY PARK, N.M.—Farm chemicals will be top topics at the special short course for fruit and vegetable growers being prepared by New Mexico State University here Jan. 14-15.

Dr. J. V. Enzie, head of NMSU's horticultural department, has announced these highlights:

- A discussion on mite control by R. A. Fisher, research entomologist, California Spray-Chemical Corp., Phoenix.
- A talk on weed control in vegetable crops by W. D. Pew, horticulturist, University of Arizona, Mesa.
- Explanation of the Perishable Agricultural Commodities Act by Joseph E. Ward, specialist in fruit and vegetable regulatory work, U.S. Department of Agriculture, Ft. Worth.
- A panel discussion on chemical thinning of apples with Dr. Mohsen Nour, horticulturist with the Middle Rio Grande Substation, Los Lunas, as moderator.

State vegetable and fruit growers associations will hold meetings during the short course.

Among those in charge of plans are M. D. Bryant, horticulturist, and John J. Durkin, entomologist with the NMSU Extension Service.

Joins Screw Conveyor As Controller

HAMMOND, IND. — The appointment of Ernest E. Harroun as controller of both Screw Conveyor Corp., Hammond, and its wholly-owned subsidiary, Screw Conveyor Pacific Corp., Santa Clara, Cal., has been announced by Russell B. Maas, president and general manager.

Ernest E. Harroun

Mr. Harroun was formerly accounting manager and division controller of the Luria Engineering Co., division of Luria Steel & Trading Corp. Prior to that he was chief accountant of the Strich Trailer division of Fruehauf Trailer Corp. He will make his headquarters at the general offices of Screw Conveyor in Hammond.

University of California Receives $20,000 Grant

BERKELEY, CAL.—What causes pollution in the atmosphere and how it can be controlled, chemically or otherwise, and what is the effect on vegetation are questions which researchers at the University of California hope to answer. A new research project will begin largely as the result of a $20,000 donation to the division of agricultural sciences made last month by the American Petroleum Institute.

It was the largest single grant in the field of agricultural chemicals made during the month.

The California Planting Cotton Seed Distributors made three donations which together totaled about $22,000 to support two projects in the field of agricultural chemicals, and a third in a related field. The sum of $9,570 has been earmarked for a study on fertilizers in cotton, and $5,106 goes for research on the control of nematodes affecting cotton. The third grant of $7,500 is for irrigation studies pertaining to cotton.

Abbott Laboratories gave $1,000 for research on the effectiveness of gibberellic acid and its potassium salt on grapes; and the United Carbon and Chemicals Co. gave $500 for research on the control of insect pests of walnuts and vegetables.

Southern Seedmen's Group To Make Nassau Trip

SHREVEPORT, LA. — Following the Southern Seedmen's Assn. Nov. 29-Dec. 1 meeting at the Carillon Hotel in Miami Beach, the association will sponsor a 48-hour trip to Nassau.

Included in the Nassau excursion, the association said, will be tours, parties and a motor launch trip.

DDT in Combinations Advised for Lygus Control

SACRAMENTO, CAL. — Northern California bean growers who have experienced diminishing control of lygus bugs with repeated sprays of DDT have been advised to change to combinations with other chemicals.

David Ramos, Sutter County farm adviser, made this recommendation after learning of a loss of control of lygus bugs with DDT in Sutter Basin bean fields.

He said the effectiveness of other materials in controlling lygus in beans is not well known but information is available on their use in seed alfalfa.

Where the corn ear worm is found more damaging than lygus, Mr. Ramos said, DDT still should be used in combinations for control of both pests.

Speed handling, reduce pile set with Du Pont URAMON® Ammonia Liquors

You can keep production fast-moving and your fertilizer free-flowing with the added conditioning benefits of Du Pont "Uramon" Ammonia Liquors.

UAL helps to prevent the cementing, pile-setting action that often results from some other nitrogen formulations. As mixtures ammoniated with UAL cool, residual moisture combines with the compounds formed—leaving a dry mix remarkably free of excessive caking, segregation and dusting. Result—your UAL goods suffer less pile set, seldom require blasting and can be moved readily by the payloader.

In addition, Du Pont "Uramon" Ammonia Liquors are non-corrosive, can be used in ordinary steel equipment. Secondary set and caking in the bags are also minimized because the urea from UAL is non-reactive with other fertilizer ingredients. And UAL mixtures are highly drillable.

After application, the extra fertilizing benefits of UAL begin. UAL provides nitrogen in both the urea and ammonium form—nitrogen that becomes available at a rate closely paralleling plant requirements. Nitrogen from Du Pont UAL is also leach-resistant; remains in the root zone long after other forms have been exhausted.

Du Pont UAL is available in five forms, including UAL-37 for even more gradual nitrogen release, and UAL-S with the added conditioning effects of ammonium sulfate. For information on which type is best suited to your needs, write Du Pont.

E. I. DU PONT DE NEMOURS & CO. (INC.)
Industrial and Biochemical Department
WILMINGTON 98, DELAWARE

Chicago 30, Illinois.....7250 N. Cicero Avenue
Philadelphia 3, Penna.....1616 Walnut Street

Du Pont of Canada Limited
P.O. Box 660, Montreal, P. Q., Canada

DU PONT
REG. U. S. PAT. OFF.

URAMON®
AMMONIA LIQUORS

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

INSECT, PLANT DISEASE NOTES

Two Leaf Spot Diseases Found on Kentucky Corn

LEXINGTON, KY.—Two leaf spot diseases on 1959 Kentucky corn crops caused concern to farmers.

The diseases were identified as the northern corn-leaf blight and the southern corn-leaf blight. The two are similar, both being caused by fungus, but have slightly different appearances.

Yields are sometimes reduced as much as 50% from the diseases, and stalks are weakened, causing considerable field losses.—S. H. Phillips.

Late Blight Hurting Pennsylvania Potato Crop

ERIE, PA.—Late blight, the most dreaded disease known to potato growers, has developed recently in a number of Erie County potato fields.

This disease, if not controlled, can completely destroy a potato crop in a relatively short time. Late blight is a fungus disease that attacks the foliage and tubers of a potato plant. Temperatures averaging below 70° F. combined with heavy fog or rains are necessary for the development and spread of the disease.

William E. Urash, county agent, stated that a most important single factor in the control of late blight is adequate coverage with spray materials. Cool rainy weather could cause blight to develop in much of the potato acreage in Erie County and unless good spray protection is provided this disease could prove to be extremely destructive.

A fungicide known as maneb has proven to be more effective against late blight than any other material now available.

In the fields where blight is not present, maneb can be used at the rate of 2 lb. per acre every five to seven days. Where blight is present and active maneb should be used at the rate of 3 lb. per acre and applied every five days.

European Pine-Shoot Moth Found in Washington

PULLMAN, WASH. — An unwelcome newcomer to Washington, an insect pest of pines, has been reported by Dr. Horace Telford, chairman of Washington State University's department of entomology. The invader is the European pine-shoot moth. Official name is Rhyacionia buoliana.

Dr. Telford said the moth has been found on ornamental pines in the Bellevue area. Discovery was made by Emmet I. Smith, Seattle, entomologist for the plant quarantine division of the U.S. Department of Agriculture.

The Bellevue appearance is the first for the European pine-shoot moth in Washington, Dr. Telford said. It has been a pest on pines in the eastern part of the country since 1914, and has also been reported in British Columbia.

Unless detected and controlled, the moth could become a destructive pest of pines around home grounds and in nurseries and new plantations throughout the west, Dr. Telford warned. It is also potentially dangerous to commercial pine forests, especially to young growth.

The WSU entomologist said the larva of the moth feeds on the growing shoots or tips and buds of its pine hosts. Its common name comes from the larva's habit of boring into growing shoots. By feeding on the new growth, the larva stunts the tree or shrub.

Favored hosts of the pine-shoot moth are mugho, red, Scotch and Austrian pine.

Dr. Telford said the larva of the moth is about a half-inch long and brownish in color with a black head and neck. The moth is rusty orange red with whitish legs and a wing spread of three-fourths of an inch. Forewings are marked with silvery cross lines; hind wings are plain dark brown. Eggs are small, flat and yellowish when first laid but later turn a reddish brown.

Hessian Fly Damage Increases in Virginia

BLACKSBURG, VA. — Damage to wheat from the Hessian fly has been on the increase in some areas of Virginia during the past few years, report entomologists at Virginia Polytechnic Institute.

Damage by Hessian flies does not become evident until spring when it is too late to do anything about them. The control is simply to plant after a date based upon location and altitude of the field.

Crown Rust Called Top Georgia Oat Disease

ATHENS, GA. — Agricultural extension service agronomists cite crown rust as the number one disease of oats in Georgia.

Seed treatment will not help to control this disease, since it does not live over in the soil or on the seedcoat. The best method of control is to use the latest oat varieties resistant to current races of rust, it was pointed out.

1960 'Hopper Infestation Predicted for Wyoming

CHEYENNE, WYO. — The Wyoming State Agriculture Department has reported that some 452,000 acres of state farm and rangeland would probably be infested with grasshoppers next year, enough so to warrant control measures, according to Everett Spackman, plant industry director.

The figures were compiled in a joint survey of adult grasshopper numbers by the department and USDA plant pest control division.

Only 236,361 acres were sprayed this summer.

Laramie County is expected to have the heaviest infestation next summer with some 95,000 acres. Other counties are Johnson, 45,000 acres; Natrona, 51,000; Converse, 40,000; Sheridan, 35,000; Fremont, 34,000; Platte, 28,000; Albany, 25,000; Big Horn, 6,000; Carbon, 3,000; Crook, 2,000; Goshen, 21,500; Hot Springs, 14,500; Niobrara, 25,000; Park, 9,000, and Washakie, 18,000.

More Halogeton Found In Two Oregon Counties

SALEM, ORE.—Discovery of Halogeton, weed scourge of the range country, in two new areas in Malheur and Harney counties, should serve as warning to Oregon stockmen to be on the alert for this weed. The Oxalate in the plant makes Halogeton poisonous to animals.

The weed was recently found over about one-half acre located two miles north of Denio by C. L. Hare of Fields. This is the first infestation of any size found in Harney County, according to George Moose, assistant plant division chief, Oregon Department of Agriculture.

Bureau of Land Management personnel at Burns pulled, sacked and burned the Harney findings within 48 hours. A three-man survey team from that office and the department at Salem combed the area for several days but found no more plants.

Ohio County Pledges Aid in Beetle Fight

TOLEDO, OHIO — Lucas County commissioners have agreed to participate with the state in the extermination of the Japanese beetle.

Robert H. Terhune, state director of agriculture, asked the commissioners to contribute an estimated $7,500 to help spray a Lucas County area along the Ohio-Michigan border.

The area to be sprayed will be a half mile wide and eight miles long. Mr. Terhune said the beetles are destroying farm crops, bushes, trees, shrubs and lawns. Michigan authorities will spray a similar strip along the border.

Mr. Terhune also pointed out that the state is battling a concentration of the beetles in the Maumee-Perrysburg area. He said the insects are capable of destroying 300 types of plants.

Stripe Rust Found On Washington Turf

PULLMAN, WASH.—An invasion of the Pacific Northwest by a new turfgrass disease was noted by Dr. Kenneth J. Patterson, Washington State University agronomist. Stripe rust on turfgrasses was discovered in Oregon only last year and is already hampering grass-seed production there.

Dr. Patterson said that no control for the new disease has been found to date.

$4.7 Million Loss from Dwarf Virus in Oregon

CORVALLIS, ORE. — Willamette Valley farmers suffered a possible $4,700,000 loss this year as yellow dwarf virus doubled its 1958 toll to destroy nearly one-fourth of the valley's cereal grain crops.

Oat fields were hit hardest with 27% of the potential crop ravaged by the disease. Barley ran second with a 22% loss. Spring wheat loss was about 17% and winter wheat, 4%.

Loss figures were estimated by county agents after talking with growers, warehousemen and others in the trade, explained Dr. William B. Raymer, plant pathologist at the Oregon State College agricultural experiment station.

Resistant barley varieties are being developed, but it will be several years before they are available. OSC researchers also are working on control practices, he reported. In the meantime, he suggests farmers check with county agents concerning growing practices that may minimize losses.

Dr. Raymer says it looks as if the disease will never disappear because it is carried over in both wild and cultivated perennial grasses and spread by aphids. He attributes this year's record loss to an abundance of aphids.

Four counties—Linn, Washington, Clackamas and Lane—appear to have losses topping the $600,000 mark.

County estimates of losses range from a high of 58% of the potential crop in Lane County to a low of 6% in Yamhill County.

Other counties in the valley estimate losses as follows: Benton, 32%; Clackamas, 37%; Columbia, 17%; Linn, 33%; Marion, 23%; Multnomah 25%; Polk, 10%, and Washington, 27%.

Some yellow dwarf has been found in eastern Oregon wheat fields, but so far has not become a problem in that part of the state, Dr. Raymer observed.

PEACH BROWN ROT

GRAND JUNCTION, COLO.—Mesa County peach growers have learned that thousands of bushels were rejected after being shipped because of brown rot.

Samples of affected fruit from shipments to Des Moines and from local orchards were sent to Colorado State University for examination. Platings made by plant pathologists there showed infection by both rhizopus and monilia.

Rhizopus is a rot caused by infection from an ever-present spore of the fungus Rhisopus nigricans. It gets its start on wounds in the fruit and the best control is constant care in handling.

Brown rot, caused by the fungus Monilia, according to CSU pathologists, may attack the blossoms, causing blossom blight, attack twigs, causing twig blight, or it may cause brown rot canker on branches. The disease is considered of little importance in regions of low rainfall during the ripening period of peaches.

Despite the fact that recurrence of the disease will be limited because of the normally dry ripening and harvesting seasons on the Western Slope, CSU pathologists point out that the loss from brown rot in one season would more than pay for the spray materials required for its control for several years.

FARMER, SPARE THAT WEED!

BRUNSWICK, GA. — A sweet-scented weed called deer tongue, which grows profusely in Glynn County, Ga. has become an important source of income for many rural families.

Gathered and dried, the weed can be sold for as much as 20¢ a pound. One buyer estimated that 50,000 lb. a year would be a conservative estimate of the amount sold here. According to buyers here, the deer tongue is used sparingly by some tobacco companies to sharpen the aroma of their products. It is also used in a number of drugs.

Five Anhydrous Workshops Scheduled in Nebraska

LINCOLN, NEB.—A series of five dealer workshops entitled "Using Anhydrous Ammonia in Nebraska," will be presented Dec. 7-11 by the anhydrous division of the Nebraska Fertilizer Institute and the Agricultural Ammonia Institute.

The workshops will be all-day affairs and will discuss such subjects as technical data, business procedure, equipment and application, sales, advertising and promotion, insurance and safety.

The workshops will be held Dec. 7 at Lincoln, Dec. 8 at Hastings, Dec. 9 at Ogallala, Dec. 10 at Kearney and Dec. 11 at Columbus.

last year over 125 firms received greater merchandising impact from their multiwalls thru UNION-CAMP'S

BAG DESIGN

another FREE service of the ★ Star Packaging Efficiency Plan!

Over 125 multiwall users last year cashed in on the bag design feature of the 5-Star Packaging Efficiency Plan. In some cases UNION-CAMP artists came up with striking new bag designs which contributed to increased sales. In others they created a family of high-recognition designs for a complete product line. In still others they developed simplified, faster-reading identification prints —resulting in thousands of dollars worth of savings.

Through the 5-Star Plan, UNION-CAMP artists and designers may help you achieve greater merchandising impact from your multiwalls. Their services are free.

Besides bag design this comprehensive packaging service offers you major money-saving improvements in bag construction, specifications control, packaging machinery and materials handling.

See your local UNION-CAMP man for details.

UNION-CAMP
MULTIWALL BAGS

Union Bag-Camp Paper Corporation · 233 Broadway N.Y. 7, N.Y.

★ BAG DESIGN · BAG CONSTRUCTION · SPECIFICATIONS CONTROL · PACKAGING MACHINERY · PLANT SURVEY

USDA Issues Status Report on Forest Insect Conditions in '58

By J. W. BONGBERG
Division of Forest Insect Research
Forest Service
U.S. Department of Agriculture

The scope and severity of forest insect infestation in the U.S. during 1958 were not markedly changed from conditions existing in 1957. While some of the pest species increased in numbers in some sections of the country, other species declined elsewhere, thus offsetting what otherwise would have been more damage and destruction than in prior years.

Several species of bark beetles occurred in outbreak numbers in many places in the coniferous forests of the West and South but the extent of outbreaks and their severity were somewhat reduced from previous years. The reduction of bark beetle infestations was brought about largely by suppressive control action on the part of public and private agencies. Low winter temperatures, however, particularly in the Southeastern states, also killed a large percentage of southern pine beetle broods, thus aiding the effectiveness of direct control action in that area. Nationwide, a total of 784,517 infested trees, cull logs and stumps were treated with insecticides or salvaged from outbreak areas.

The spruce budworm continued in epidemic status in much of the spruce-fir forests from coast to coast. Infestations were most severe in Maine, Minnesota, the northern Rocky Mountains, Arizona and eastern Oregon. Lesser infestations occurred in Wisconsin and Michigan; in the central and southern Rockies; in New Mexico; and in one area in northeastern California. Aerial spraying to reduce epidemic populations and to prevent damage and destruction of forest stands was undertaken on a total of 1,231,911 acres: 301,861 in Maine; 12,000 in Minnesota; 100,000 in Arizona and 818,050 in Oregon. A lesser acreage is expected to be sprayed during 1959.

A variety of other defoliating insects occurred in outbreak numbers in all sections of the country. Several species of pine sawflies were particularly abundant in the East and South; needleminers were destructive in the West; tent caterpillars were numerous in the Lake States, the Northeast and the Southwest; and loopers, leafrollers, webworms, tussock moths were abundant in various other places. Aerial spraying on 11,066 acres was undertaken to suppress epidemic populations, and in most instances excessive damage to the forest resource was averted.

Twig- and terminal-feeding insects were quite prevalent in most sections of the country and excessive damage was caused in many places, particularly in areas where pine stands are being regenerated by planting. Suppressive action for control on some 5,000 acres was initiated against such pests as the white pine weevil, European pine shoot moth, Saratoga spittlebug and pine reproduction weevils in many areas, to protect plantations and reproduction.

The balsam woolly aphid continued in epidemic proportions in large areas in the Northeast and in the Pacific Northwest, and the pest was destructive in stands of Fraser fir in the Southeast. A major effort was made during the year to introduce and establish predaceous beetles from Europe and Japan for biological control. Effectiveness of the predators in control of the aphid is not yet known but there are indications of successful colonization of two of the species liberated.

Outbreaks of the Douglas fir tussock moth were discovered for the first time in fir forests of New Mexico and at a new location in Arizona. In addition, the New Mexico fir looper reappeared in outbreak numbers on a portion of the Lincoln National Forest, the first since 1952. These infestations, discovered late in 1958, will be treated during 1959, in an effort to prevent undue loss of the resource being attacked.

Alaska

Forest insect activity in Alaska increased during the year and continuing infestations at moderate levels are expected in several areas in 1959. The Alaska spruce beetle increased in portions of the white spruce stands on the Kenai Peninsula and, for the first time in two years, new infestation centers of hemlock sawfly and black-headed budworm occurred at several locations in southeast Alaska. The spear-marked black moth, which erupted as an epidemic in stands of paper birch on some 5,900,000 acres near Fairbanks in 1957, began to decline during the summer months due to parasites and a disease organism affecting the larval populations. The Sitka spruce beetle was endemic over its entire range and no further damage was reported by Ips beetles. There was no direct action undertaken to suppress any of the insect infestations in Alaska.

California

Losses due to forest insects decreased to some extent in California. In some of the high-elevation recreational forest, however, this was not the case. Lodgepole pine, in particular, continued to sustain severe infestations of the mountain pine beetle and lodgepole needleminer. Jeffrey pine in these high elevation forests was also damaged by Jeffrey pine beetle, and late in the year signs of increased bark beetle activity began to show up in several localities throughout the state.

The status of the major insects is as follows: The western pine beetle in ponderosa pine decreased; the mountain pine beetle in lodgepole pine increased; the Jeffrey pine beetle was active in many parts of the state; the Douglas fir beetle showed signs of increased activity in northwestern California; the California flatheaded borer in ponderosa and Jeffrey pine occurred in outbreak numbers in southern California; pine engravers caused little damage early in the year but showed signs of increasing late in the fall; the fir engraver was epidemic in only a few local areas; the lodgepole needle miner remained epidemic in lodgepole pine, with one new center of infestation discovered; seed and cone insects caused serious damage and, for the first time in many years, Douglas fir engraver infestations were common in young Douglas fir in northwestern California.

Suppressive action to control bark beetles and flatheaded borer was intensified in southern California and a method was developed for control of the lodgepole needle miner.

Oregon and Washington

Outbreaks of forest insects in Oregon and Washington occurred on slightly over 2 million acres, most of which were infested with the spruce budworm, balsam woolly aphid, Douglas fir beetle, mountain pine beetle and western pine beetle. Aerial spraying of 818,050 acres, coupled with natural control, reduced the spruce budworm to the lowest point since 1947, and the population trend is downward. Tree killing by the balsam woolly aphid declined but the area affected expanded and the insect population flared up late in the season.

Efforts were intensified during the year to introduce predaceous beetles from Europe and Japan for control of the aphid. A severe outbreak of the Douglas fir beetle developed in southern Oregon but there were indications that the infestation will decline during 1959. The western pine beetle and mountain pine beetle flared up generally in the pine regions of both states but only the former species is viewed with alarm currently. Suppressive control for the Douglas fir beetle was limited to salvage of infested trees.

The selective removal of high-risk trees from eastside stands of ponderosa pine was intensified as an indirect measure for control of western pine beetle.

The Rocky Mountains

Forest insect infestations in the northern Rocky Mountains were similar in most respects to conditions during the previous year. Bark beetle activity, especially that of the mountain pine beetle increased, and the Douglas fir beetle appeared to be entering a new cycle of destructiveness. The Engelmann spruce beetle was epidemic only in local areas in and adjacent to previous outbreak centers. Defoliating insects, as a group, were the principal pests in the region.

Although infestations of spruce budworm were static, intensity of tree defoliation increased in some areas. The larch casebearer, a relative newcomer in the northern Rockies, spread to additional areas. Although there was no aerial spraying for control of spruce budworm during the year, action programs were continued for control of Engelmann spruce beetles, and 159,725 infested trees were salvaged.

In the central Rockies, losses increased and infestations of outbreak proportions occurred on over a million acres. The Engelmann spruce beetle continued as a problem in Colorado and Wyoming and new epidemics developed on portions of three national forests in Utah. The Black Hills beetle, mountain pine beetle, and Douglas fir beetle increased in numbers, and outbreaks were numerous and widespread.

For the first time in several years, heavy defoliation of fir, spruce, and pine by spruce budworm occurred in Colorado, and budworm infestations continued in Idaho. The Great Basin tent caterpillar was noted throughout southern Colorado and heavy defoliation of the aspen type is forecast again for 1959.

The Southwest

Insect activity decreased sharply in Arizona and New Mexico, even though infestations of some species were more severe than in the past years. Tree killing caused by bark beetles was greatly reduced from levels of 1957, and defoliation of ponderosa pine by a needleminer almost disappeared. In contrast, damage to fir and spruce by spruce budworm increased; two additional areas were found infested by Douglas fir tussock moth; and infestations of Douglas fir beetle were more acute.

Logging infested trees was continued as a measure for control of pine bark beetles, supplemented to the extent needed by spraying infested trees with toxic oils. The spruce budworm was brought under control by aerial spraying on 100,000 acres in Arizona, and tent caterpillars were combatted by introducing virus organisms into outbreak centers or by aerial application of DDT sprays.

The Lake States, Central States and the Northeast

The scope and intensity of the more important forest insects in the Lake States, Central States and the Northeast were not greatly different in 1958 from the previous year. The spruce budworm caused moderate to severe defoliation of balsam fir in Maine, Minnesota, Wisconsin and Michigan, and aerial spraying was undertaken to suppress infestations on 313,861 acres. Populations of the jack pine budworm were generally light throughout Michigan and Wisconsin and suppressive controls were not needed in any area. Other pest species such as the European pine shoot moth, Saratoga spittlebug, white-pine weevil, larch sawfly, pine sawflies, tent caterpillars, the gypsy moth and others were not materially changed from conditions in 1957.

In all cases where infestations were most severe, suppressive controls were initiated to protect the forest resource. Control was needed, for example, to suppress the Saratoga spittlebug, shoot moths, sawflies, weevils, tent caterpillars, and the gypsy moth. The latter control program, a cooperative undertaking between the Agricultural Research Service and the states, involved spraying on 510,000 acres.

The Southern and Southeastern States

The insect situation in the Southern States is much improved over conditions of a year ago but several pests continue as a constant threat to the timber stands. Early in the year, rapidly developing infestations of southern pine beetle seriously threatened stands of southern pines in the Big Thicket area of southeast Texas but all were effectively suppressed by public and private agencies by late summer.

In the South and Southeast, tree killing by the major bark beetles was less widespread than has been the case for the past several years. However, action programs in control involved spraying or salvaging over 415,000 trees.

The extreme low temperatures of 1957-58 killed most of the larval broods of the southern pine beetles in the Southeast and, for unknown reasons, black turpentine beetle activity diminished almost entirely by mid-year. Other insects, however, occurred in outbreak status over large areas and are of considerable concern; sawfly infestations were epidemic in Virginia, North Carolina and in north-central Florida; and an outbreak of the elm spanworm spread over 570,000 acres in Georgia, Tennessee and North Carolina. The balsam woolly aphid, a new pest in the Southeast, threatens the fir resources on Mt. Mitchell and in other areas in North Carolina.

Suppressive controls were not undertaken for sawfly and spanworm infestations, although methods for doing so were developed and will be put to use, if needed, during 1959. Miscible oil sprays will be tried on a pilot basis for control of woolly aphid on high-value trees in heavily used recreational areas in North Carolina.

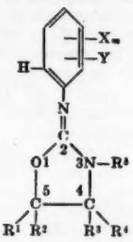
C. R. Kennedy H. H. Phillips

PROMOTION of two executives of American Cyanamid Co.'s agricultural division was announced by B. F. Bowman, divisional marketing director. C. R. Kennedy, formerly northeast regional manager of the division, has been promoted to assistant manager of the phosphates and nitrogen department. Mr. Kennedy, a science graduate of Louisiana State University, joined Cyanamid in 1938. Named to replace Mr. Kennedy was H. H. Phillips, who was assistant western regional manager with headquarters in Los Angeles. He is a graduate of Oklahoma A&M College, where he majored in agricultural economics. He has been with the company since 1946.

PATENTS and TRADEMARKS

2,902,355

Certain 2-Phenylimino, 3-Alkyl Oxazolidines, Compositions and Methods of Use as Herbicides. Patent issued Sept. 1, 1959, to Raymond W. Luckenbaugh, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington. A method for the control of undesired vegetation comprising applying to the locus to be treated, in an amount sufficient to exert herbicidal action, the compound represented by the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen, and alkyl groups containing less than 5 carbon atoms, *m* is a positive integer less than 4; R^1, R^2, R^3 and R^4 are selected from the group consisting of hydrogen and methyl; and R^5 is selected from the group consisting of alkyl radicals containing less than 5 carbon atoms.

2,907,650

Plant Growth Stimulation. Patent issued Oct. 6, 1959, to Louis G. Nickell, Port Washington, N.Y., assignor to Chas. Pfizer & Co., Inc., New York. A process for the stimulation of plant growth which comprises contacting the plant material with isochlortetracycline in an amount sufficient to effect said stimulation.

2,907,691

Fungicidal Preparations. Patent issued Oct. 6, 1959, to Gilbert Spencer Hartley, Fulbourn, and Peter Owen Park, Stapleford, England, assignors to Fisons Pest Control, Ltd., Bourn, England. A process for the treatment of plants which comprises spraying the plants with an aqueous suspension consisting essentially of water, a substantially water insoluble solid agricultural chemical and the salt of a volatile base selected from the group consisting of ammonia, trimethylamine and triethylamine, and an acid containing from 12-18 carbon atoms selected from the group consisting of saturated aliphatic carboxylic acid and aliphatic carboxylic acid having at least two double bonds, said salt constituting from 2 to 100% by weight of said agricultural chemical.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

Nynamite, in capital letters, for insecticides. Filed Sept. 30, 1958, by Food Machinery & Chemical Corp., New York. First use June 10, 1958.

CPR, in capital letters, for insecticide concentrate for the manufacture of insecticides. Filed Oct. 15, 1958, by Food Machinery & Chemical Corp., New York. First use July 8, 1957.

Millburn, in capital letters, for peat moss. Filed Feb. 27, 1959, by Millburn Peat Co., Inc., Chicago. First use June 7, 1957.

Design, pennant with capital CCC and letters oastal enscribed for commercial fertilizers. Filed April 3, 1959, by Coastal Chemical Corp., Yazoo City, Miss. First use Feb. 17, 1959.

Blade, in capital letters, for lawn fertilizer. Filed April 16, 1959, by the Hubbard-Hall Chemical Co., Waterbury, Conn. First use April 14,

Lawn Craft, in hand-drawn letters, for lawn fertilizer. Filed April 24, 1959, by Hubbard-Hall Chemical Co., Waterbury, Conn. First use March 7, 1957.

Daco, in capital letters, for plant food. Filed April 30, 1959, by George A. Davis, Inc., Chicago. First use about March, 1933.

Soilray, in capital letters, for fertilizers. Filed May 5, 1959, by the Farm Chemical Corp., Bay St. Louis, Miss. First use April 27, 1959.

Oregon Farm Marketings Up $8 Million in 1958

SALEM, ORE.—Oregon's 1958 cash receipts from agricultural marketings at the farm level have been revised upward to $400,467,000, or $8,000,000 more than in 1957, says Frank McKennon, director of agriculture.

Crops continue to lead livestock and animal products by a comfortable $20,000,000 — $210,272,000 vs. $190,295,000—but the margin is down from the $42 million crop advantage in 1957.

He hastens to add that these figures represent the income before any costs. The net realized farm income in Oregon was $131,800,000—or a net income per farm of $2,641 in 1958.

Colorado Firm Sold; Trade Name to Continue

COLORADO SPRINGS, COLO. — The Heller Greenhouse Laboratories here have been sold for an undisclosed sum to the American Home Products Co., Inc., New York, according to Mrs. Mary K. Heller, owner.

The Boyle Midway Division of the firm will manufacture and distribute the "Heller-Gro" plant food from an established plant in Chicago, Mrs. Heller said.

She stated that the trade name will be retained and "Heller-Gro" will complete the "Antrol" line of insecticides, weed killers and other products.

Mrs. Heller will become associated with the national firm in promotion and publicity work. For a time she will work in the main headquarters offices in New York City, she said.

3 *good reasons for good seasons with*

NORTHWEST FERTILIZER!

You'll find Northwest Fertilizer pays in several ways! These truly top-grade fertilizers, with free-flowing qualities (off your shelves — out of your customers' spreaders) mean increased profits for everyone!

• *YOUR CUSTOMERS prefer Northwest Fertilizer because of its proven quality and uniformity. Free-flowing Northwest is guaranteed not to cake or lump.*

• *DEALERS prefer Northwest Fertilizer because of the strength and quality of the bags. Careful packing has given Northwest the best reputation for car loadings, with a minimum of breakage in transit.*

• *EVERYONE benefits from the services Northwest gives their dealers. Now, fastest delivery ever, either direct from plant or warehouse.*

For a "good season"—at the cash register and in the field —order your Northwest Fertilizers NOW!

NW NORTHWEST FERTILIZER

NORTHWEST
Nitro-Chemicals Ltd.
MEDICINE HAT, ALBERTA, CANADA
U.S.A. SALES OFFICE: 210 South 5th Street, Minneapolis 2, Minn.

SCREWWORM

(Continued from page 1)

to this program an estimated 40,000 cases per month have been reported in this area. Although a number of cases have occurred in Mississippi recently near the Mississippi River, intensive survey and spraying operations have been initiated to prevent spread of infestations.

The 13 federal inspection stations along the Mississippi River will be maintained to prevent infested animals from entering the southeastern eradication area from the West. Both USDA and the southeastern states will continue surveys and inspections at the present level to uncover any infestations that may arise after discontinuing fly dispersal. Federal regulations pertaining to screwworms and the movement of livestock remain in force until further notice.

Farmers were requested to be particularly watchful for infested animals following discontinuance of sterile fly dispersal, and to report suspected cases immediately so eradication measures can be resumed, if necessary, before the screwworms spread. Dispersal of sterile flies was discontinued in the southern part of Florida July 25 and no screwworms have been discovered in that area in spite of stepped-up-surveys.

Screwworm flies have been reared in an artificial media at the rate of about 50 million flies a week in the laboratory at Sebring, Fla., and made sexually sterile by exposure to radioactive cobalt. Since July, 1958, more than 2¾ billion sterile flies have been released over nearly 85,000 square miles in Florida, and parts of Alabama and Georgia. The program is based on the principle that sterile male flies mate with native female flies which produce eggs that do not hatch. Thus, the species is eventually wiped out.

Scientists from Both Carolinas to Meet, Discuss Progress in Witchweed Battle

CLEMSON, S.C. — Entomologists and pathologists from the two Carolinas are going witch hunting four days before Halloween this year.

The culprit they seek is the witchweed, a parasitic plant which can cause heavy damages to corn, sorghum, sugarcane, and other plants of the grass family.

In fact, the witchweed hunt and the search for an effective eradication or control program have been going on for three years—since the dread weed was identified in 1956 in eight counties in North and South Carolina. This year it is still confined to the Carolinas, but has now been reported in 14 counties in North Carolina and 7 in the Pee Dee section of South Carolina.

On Oct. 27, federal and state research, control and regulatory personnel will meet at Whiteville, N.C., to consider the action program and review progress in various fields of activity against witchweed.

Meetings have been held periodically since the discovery of witchweed in this area. E. D. Burgess of Washington, director, the plant pest control division of Agricultural Research Service, wrote in his letter calling for the Whiteville meeting, "We now have another year of research and methods improvement work behind us, and a full season of eradication work is being completed. It seems appropriate at this time that representatives of all interested agencies meet again to review progress and accomplishments in various fields of endeavor related to the problem."

The early fall meeting will be helpful in making program decisions necessary in planning next season's work, Mr. Burgess said. He also noted that time would be provided for research and methods improvement personnel to "review results of the season's work to the extent that some conclusions may be drawn."

In the 71st annual report of the South Carolina Agricultural Experiment Station, L. H. Senn, assistant state entomologist, describes the witchweed as a pest of potentially great importance.

"A single witchweed plant can produce 50,000 to 500,000 tiny seeds that can barely be seen by the naked eye and can be moved by wind, water, and soil. The seeds may lie in the soil for 20 years waiting for a host. They germinate when stimulated by emanations of 'host extracts' from nearby roots, mainly of host plants," Mr. Senn said.

"Getting the millions of tiny seeds in the soil to germinate and destroying the plants before new seed can be produced is one of the few known methods of dealing with the pest. Methods of control now practiced in South Carolina include the use of cultural and chemical practices, quarantine, and cleanliness of containers, farm equipment and vehicles."

Mr. Senn says the known infested area in the seven Pee Dee area counties is located on 918 farms and represents 121,432 acres. This does not represent a true picture of the actual infestation, he says, since an entire farm is considered infested even though witchweed is found on only a small segment of that farm.

Officials feel this parasite can be successfully controlled and eventually eradicated with proper supervision of control programs, rigid enforcement of the quarantine, and continued research to find new control measures.

Four Midwest States Announce Meeting Dates

ST. PAUL, MINN.—The University of Minnesota soils department announces that its annual soil and fertilizer short course will be held Dec. 7-8 on the campus of the Institute of Agriculture in St. Paul.

North Dakota State College announced that its annual farmers' and dealers' soils and fertilizer short course is set for Oct. 30, in Fargo.

The annual lime and fertilizer day will be held by the University of Wisconsin on Jan. 25 at the campus in Madison.

Dr. Paul Carson at South Dakota State College, announces that the South Dakota Fertilizer Dealers Program will be held Jan. 26-27.

NEW DISTRIBUTOR

CLEVELAND—An agreement for the sale and distribution of Ferro Fritted Trace Elements, a fertilizer additive known as "FTE," throughout the state of Florida has been signed between Ferro Corp., Cleveland, and the Cummer Lime and Manufacturing Co. of Jacksonville, Fla., according to an announcement by Gene L. Bruton, manager of Ferro's agricultural division.

Dealers and formulators agree DETHMOR® WARFARIN makes rodent baits more effective *and* more profitable.

Eleven years of farm magazine advertising have established WARFARIN as the world's most famous rat and mouse killer. Tasteless, odorless, painless . . . WARFARIN is economical and completely effective. Rats never become bait shy or build tolerance. It's safe, too, . . . won't harm children, pets, or livestock when used as directed.

Feature, promote and sell WARFARIN baits *now* . . . while WARFARIN's national program is in full swing!

PENICK

Farm Chemical and Insecticide Division

S. B. PENICK & COMPANY • 100 CHURCH ST., NEW YORK 8 • 735 W. DIVISION ST., CHICAGO 10

SPECIAL MERCHANDISING SECTION

BETTER SELLING

MARKETING NEWS AND FEATURES

Signs Bring Customers

THE GRAVES FARM STORE, East Des Moines, Iowa, reaches garden and lawn minded customers spring, summer and fall through some well placed signs on the store front, and in the display windows.

One large sign on the corner of the building front reads "FOR RENT," and lists the various items the firm has on a rental basis. The sign stresses the fact that there is no deposit required. The rental customer merely shows his driver's license and states where he works and banks.

The rental items include such items as fertilizer spreaders, hedge trimmers, lawn mowers, garden tractors, lawn rollers, post augers, lawn sweepers and wheelbarrows.

"This rental service helps us sell a lot of new merchandise, too," states Ralph Graves, owner. "People decide to buy a mower or garden tractor on their own in many instances, especially after some experience in renting one. The sign, too, helps us win new customers from street traffic."

Paper window signs, lettered in red and black, are also employed to advertise garden and sprinkler hose, lawn chairs and barbecue items. Sidewalk as well as vehicular traffic sees these large, easy to read signs, and extra sales are made.

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Dealers need to be aware of significant changes that are taking place on farms and ranches of the U.S. In the opinion of J. G. Richard, assistant director, Agriculture Extension Service, Louisiana State University, some of the important factors that the farmer of tomorrow will have to consider if he is to stay in the farming business are:

1. He will have to do more thinking, planning and organizing and analyzing the facts to select alternatives, enterprises, new methods and techniques. He will have to give more attention to the farm layout, soil improvement and conservation, engineering and equipment. He will have to make maximum use of his resources of land, labor and capital. He will have to select alternative enterprises that go to make up the whole farm as an economic unit; efficient use of land and capital will have to be substituted for labor where possible.

2. The farmer of tomorrow will have to keep up-to-date and very current on market reports and outlook information, to determine when is the best time to sell and to buy.

3. He will have to use the recommended quality and quantity of fertilizer, as fertilizer is going to continue to be one of the best buys in the farm production outlay.

4. He will have to make intelligent use of new chemicals for control of insects and diseases, and for grass and weed control.

5. He will have to weed out low quality animals in his herd. Anytime is a good time to cull low producing

(Turn to OVER THE COUNTER, page 13)

Texan Makes Guinea Pig Of His Farm to Sell $100,000 in Fertilizer

By RUEL McDANIEL
Croplife Special Writer

"Use your own farm as a 'guinea pig' to prove the practical investment of commercial fertilizers in row-crop production if you own a farm; and if you don't, try to arrange for the use of a friend's farm as a demonstration of fertilizer usage."

That is the practical suggestion elicited from the experience of R. L. Clipson, owner of Farmers' Supply Co., Eagle Lake, Texas. Mr. Clipson owns a 500-acre farm and ranch near town and spends much of his time in its operation. Dick Oberhaus is manager of the company.

"The best way we have found to convince a skeptical prospect that fertilizing pays in this country," explains Mr. Oberhaus, "is to show him what it will do for the same kind of crops he grows. We do this on Mr. Clipson's own farm. Thus fertilizer performs two important objectives for us: It increases farm production, and it provides a practical demonstration for all to see. I know we have gained numerous customers primarily on the strength of the demonstrations put on at the farm."

The company sells about $100,000 worth of fertilizers annually, and it pushes sales in ton-lots.

The farm serves in numerous ways to turn the decision in favor of using fertilizer. For example, last year Mr. Oberhaus suggested to a local farmer that he could increase his maize production by the use of the proper amount and kind of fertilizer.

"I've got land as rich as any in the county," the prospect countered. "River bottom land. Why should I put fertilizer in soil like that?"

Mr. Oberhaus explained that some of Mr. Clipson's land was almost exactly the same as the prospect's. Then he showed him actual figures on the use and results of fertilizer for maize production on the Clipson farm. The figures were such that it was easy to compare the production of maize on fertilized land with that of land alongside without fertilizer. The increased production was figured out for the prospect, so that he could see that after paying for all costs entering into the fertilizing operation, the increased production represented a net profit of more than $10 per acre from the maize crop.

The farmer bought enough fertilizer for 20 acres of maize, with the assertion that he would run his own test. This year, he used fertilizer on all of his 200 acres of maize.

"I doubt if we ever could have convinced him," explains Mr. Oberhaus, "if it had not been for the practical demonstration—and actual figures—on fertilizer use on R. L. Clipson's farm."

The management also uses the farm and ranch to demonstrate the value of fertilizing pasture land to increase grazing potential, using the increased number of cattle that can be supported by an acre of land, and the resultant gain in beef poundage, as the basis for proving the value of fertilizer on ranch land intensively grazed.

The Eagle Lake area produces rice, corn, maize and cotton. The Clipson farm grows all these crops in sufficient quantity to demonstrate fertilizer use on all of them, in addition to usage of fertilizers on range land.

The company concentrates its fertilizer selling effort on those customers and prospects who can buy in ton-lots, offering free delivery anywhere in the trade area for ton orders.

"It takes no longer to sell a ton than it does cwt.," Mr. Oberhaus

(Turn to TEXAN, page 13)

DICK OBERHAUS, manager, Farmers' Supply Co., Eagle Lake, Texas, checks his off-season fertilizer supply.

WHAT'S NEW

IN PRODUCTS · SERVICES · LITERATURE

No. 6969—Stainless Steel Sprayer

A stainless steel sprayer with electrically seam-welded joints and threaded fittings to prevent leaks has been announced by the Lofstrand Co. The stainless steel combats corrosive action of some insecticides, the company says, and gives the sprayer a long live. The unit is equipped with a

shoulder sling for easy handling. This sprayer is the accepted standard model for U.S. Army Engineers, the company says. For more information, check No. 6969 on the coupon and mail.

No. 6970—General Catalog

The 1959-60 edition of the Dow Chemical Co.'s general catalog is now available. The 44-page publication, called "Products of the Dow Chemical Company," lists the properties and uses of some 375 industrial, pharmaceutical and agricultural chemicals currently produced by the firm. The listing includes established products and developmental items. For copies of the catalog, check No. 6970 on the coupon and mail.

No. 6971—Accident Booklet

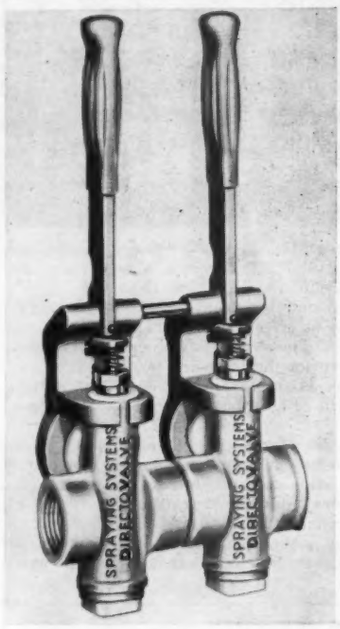
The 1959 edition of "Accident Facts," the National Safety Council's statistical yearbook, is now available. It contains facts and figures on all types of accidents—home, traffic, industrial, public, farm and school. Several sections are devoted to industrial accidents, the council said, and provide a comprehensive background for an industrial safety program. The booklet contains a list of accident rates by major industry groups, accident trends, the part of the body most often injured in accidents and off-the-job accident problems. For information on the booklet and quantity prices, check No. 6971 on the coupon and mail.

No. 6972—Descriptive Brochure

A brochure containing information about the services of the Bio-Search & Development Co. has been made available. The brochure describes the company's bioanalytical service whereby coded chemicals may be submitted for bioassay in all areas of biological activity and use. A section on the company's personnel and system, plus charts on the firm's search and development program and stages of bio-testing are included. For copies of the brochure, check No. 6972 on the coupon and mail.

No. 6968—Control Valve, Selector

Spraying Systems Co. announces its new control valve and selector for spray rigs, called the "DirectoValve." All parts of the valve that are touched by chemicals are made of either nylon or stainless steel, the company says. The valves are supplied in one, two, three or four port designs. Pictured is the two-outlet-port valve for use with a two-section boom. Each valve



section is opened by lowering the pivoted handle. The unit can be positioned anywhere adjacent to the tractor seat for the convenience of the operator, the company says. Design feature, according to company literature, is that the valve provides a bypass when closed, protecting hose lines, fittings and pump from excessive pressure buildups. For more information, check No. 6968 on the coupon and mail.

No. 6960—Weed, Brush Killer

A weed and brush killer developed especially for control of deep-rooted weeds and weed trees has been introduced by Allied Chemical's General Chemical Division. Called "Urab," the herbicide is effective against scrub oak, wild hickory, sassafras, poison sumac and other weed-trees, the company said. Also listed by the company as being controlled by the product were trumpet vine, briars, cattails, Canada thistle and all types of brush. The killing ingredient in "Urab" (3-phenyl-1, 1-dimethylurea trichloroacetate) is soluble in water. The product is not recommended for use where the roots of desirable plants extend and professional or experienced operators should apply, the company said. For more information, check No. 6960 on the coupon and mail.

No. 6964—Liquid Fertilizer Applicator

A liquid fertilizer applicator has been developed by Dempster Mill Manufacturing Co. The applicator, designated the No. 600 "LiquiJector," will be available in models for either anhydrous ammonia or liquid fertilizer solutions applications. Anhydrous ammonia models come equipped with a choice of the Dempster Model B adjustable stroke positive displacement metering pump or flow valve de-

livery, the company said. Solutions models are equipped with Dempster Model SN or SC metering pumps. The pumps are driven direct from the ground wheel. Axles are adjustable from 72 in. to a maximum of 84 in. width; by changing the forward bracket setting of the double acting hydraulic lift, the applicator operates with either high or low clearance; the 2 in. sq. tool bar can accommodate either regular rigid beams or Dempster 1⅛ in. double coil spring shanks. For more information, check No. 6964 on the coupon and mail.

No. 6958—Nitrogen Pamphlet

Commercial Solvents Corp. has prepared an informative pamphlet describing the function of nitrogen in supplying the needs of soil bacteria. The folder is 3½x6½ in. so it may be placed in envelopes for mailing to customers. CSC makes the folder available to dealers, and there is a space for imprinting dealer's name on back. The literature is appropriate for fall fertilization schedules and describes the aspects of the firm's "Hi-D" ammonium nitrate product. Copies of booklet are available by checking No. 6958 on the coupon and mailing.

No. 6967—Lawn Fertilizer Spreader

The Cyclone Seeder Co., Inc., announces the Cyclone Model B Lawn Spreader. According to company lit-

Nutrients," "Reported Responses," "The Methods of Use," "Typical Properties," "Solubility Data," "Analytical Methods," "Biological Studies" and a bibliography and abstracts. According to the bulletin's preface, the results of work done by agricultural station workers are quoted or reflected in the report. For more information, check No. 6965 on the coupon and mail.

No. 6961—Lining Materials Data

Gates Rubber Co. announced the availability of a data sheet entitled "Corrosion Resistant Characteristics of Rubber and Plastic Lining Materials." The sheet contains revised tables showing the temperatures of various corrosive solutions that each Gates Tank Lining stock can withstand, the company said. For more information, check No. 6961 on the coupon and mail to this publication.

No. 6965—Gibberellin Bulletin

Merck & Co., Inc., announces an extensive technical bulletin on its brand plant growth substance "Gibrel." The bulletin contains such chapters as "Agricultural and Horticultural Uses," "Gibrel in Relation to Plant

Also Available

The following items have appeared in previous issues of Croplife. They are reprinted to help keep dealers on the regional circulation plan informed of "What's New."

Send me information on the items marked:

- ☐ No. 6958—Nitrogen Pamphlet
- ☐ No. 6959—Combination Spreader
- ☐ No. 6960—Weed, Brush Killer
- ☐ No. 6961—Lining Materials Data
- ☐ No. 6962—Information on Spreader
- ☐ No. 6964—Liquid Fertilizer Applicator
- ☐ No. 6965—Gibberellin Bulletin
- ☐ No. 6966—Literature on Containers
- ☐ No. 6967—Lawn Fertilizer Spreader
- ☐ No. 6968—Control Valve, Selector
- ☐ No. 6969—Stainless Steel Sprayer
- ☐ No. 6970—General Catalog
- ☐ No. 6971—Accident Booklet
- ☐ No. 6972—Descriptive Brochure

(PLEASE PRINT OR TYPE)

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67

Reader Service Dept. Minneapolis 40, Minn.

erature, features include freedom from fertilizer streaks, accuracy of application and extra-wide spread of up to 8 ft. Width of the spread varies from 4 ft. to 8 ft., depending on the weight of the material. Seed, fertilizer, lime, ice melters and granular herbicides, insecticides and other pesticides can be applied with the spreader, the company said. Material is thrown in a fan-shaped pattern ahead of and to the sides of the spreader. Rates can be varied from 4 oz. to 30 lb. per 100 sq. ft. An on-off knob on the handle gives positive shutoff, the company said. For details, check No. 6967 on the coupon and mail.

No. 6966—Literature on Containers

Carbolineum Wood Preserving Co., Inc., announces a new flyer which discusses the company's three color, all lithographed 5 gal. cans. The flyer is in color and contains photographs of the cans. Information about the display advantages of the cans is included. For more details, check No. 6966 on the coupon and mail to this publication.

No. 6962—Information On Spreader

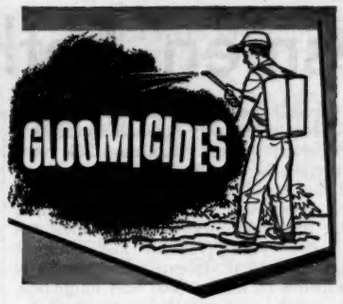
A folder and price sheet on the Tyler Spreader is available from the Tyler Manufacturing Co. The folder contains a drawing of the fertilizer spreader in use, plus photographs and construction features. The price sheet contains price information on all of the firm's models plus prices on optional equipment. For copies of the folder and price sheet, check No. 6962 on the coupon and mail to this publication.

No. 6959—Combination Spreader

Gaddis Bros. Manufacturing Co., Inc., has announced the Model 100 "Dual-Purpose Combination Spreader." The unit features a triple drive fan assembly incorporating a two-speed transmission, cab-controlled, allowing simple shifting for wide or narrow spread applications of lime and fertilizer, whichever is desired. Two 20 in. diameter distributor fans have built-in slip clutch drive arrangement which eliminates all chain and sprocket drives, the company says. The 34 in. conveyor drag chain is driven by a 50:1 worm gear drive case with a 2 in. drag shaft driving 12 tooth steel conveyor drive sprockets. The 50° sloping sides along with the wide conveyor eliminate bridging of materials and allow self-cleaning of unit, the company says. For more information, check No. 6959 on the coupon and mail.

NEW SPRAY

WASHINGTON—A chemical spray that stops pollen development on cotton without harming female parts of the plants has been developed by researchers of the U.S. Department of Agriculture. The result is that male-sterile flowers set seeds only with pollen introduced from other cotton plants. The method is said to make the hybridizing of cotton easier and to have possibilities for application to other crops.



Papa Bear—Somebody's been drinking my whisky.

Mama Bear — Somebody's been drinking my gin.

Baby Bear—Hic!

★

"Why not marry," said Mr. Newlywed to the woman-hater, "and have a wife to share your lot?"

"It sounds all right," was the reply, "but some of these shareholders blossom into directors."

★

Think how a mother kangaroo must feel on a rainy day when the kids can't play outside.

★

On a questionnaire asking: "What is the principal contribution of the automobile age?" the following answer was given by a college student: "It has practically stopped horse stealing."

★

A meek little man walked into a bar, ordered two drinks from the burly bartender, drank one and poured the other into his shirt pocket. After about 10 rounds of this procedure the bartender said, "Pal, why are you pouring the other drink into your shirt pocket?"

The little man jumped up and snarled, "Mind your own business, you big oaf, or I'll come over the counter and whale the daylights out of you."

About that time a blurry-eyed mouse stuck his head out of the man's shirt pocket and said, "That goes for your darned cat, too."

★

The Gal—Don't be so impolite! You've yawned five times while I was talking to you.

The Gob—I wasn't yawning—I was trying to say something.

★

The papa had been asked by the young man for his daughter's hand.

"I see no reason," he announced, "why you shouldn't marry my daughter—if you can support a family, that is."

"I can certainly do that, sir."

"Wonderful!" exclaimed the head of the family. "You have my consent—and counting my little girl, there are six of us."

Wherever you are in the West, you have ANCHOR in your own backyard!

CENTRALLY LOCATED PLANT

Western Phosphates, Inc., manufactures Anchor fertilizers at Garfield, Utah — a location that's ideal for serving dealers and manufacturers in any Western state.

LOCAL WAREHOUSE NETWORK

In-transit warehouses hold abundant stocks of Anchor fertilizers at many points throughout the West. Your orders can usually be filled from these convenient, local supplies.

TEN WESTERN SALES OFFICES

Wilson & Geo. Meyer & Co., Intermountain, sales agent for Anchor fertilizers, maintains 10 convenient offices in major Western agricultural areas. To order, just call or write the office nearest you.

Top-quality Anchor fertilizers now available for your formulations or for resale:

Anchor Treble Superphosphate 45%, pelleted — 900 lbs. per ton of available, readily soluble phosphate.

Anchor Treble Superphosphate 45%, ammoniation grade — made for greater nitrogen absorption. High free-acid and moisture content.

Liquid Phosphoric Acid — suitable for soil or water application or for manufacturing complete fertilizers.

Anchor Ammonium Phosphates, pelleted — completely soluble phosphate in four combined analyses: 11-48-0, 16-20-0, 13-39-0, and 16-48-0.

New Anchor Ammonium Nitrate Phosphates are now available in many Western areas. Your Anchor representative can give you full details.

ANCHOR

PELLETED PHOSPHATE FERTILIZERS

Produced by WESTERN PHOSPHATES, INC., Salt Lake City 10, Utah

Distributed by WILSON & GEO. MEYER & CO., INTERMOUNTAIN

San Francisco • Salt Lake City • Fresno • Los Angeles • El Centro • Phoenix • Portland • Seattle • Yakima • Denver

Keeping Your Salesmen Enthusiastic

By MALCOLM H. GOTTERER
Visiting Assistant Professor
of Business Administration
University of California, Berkeley
and
IRVING MILLER
General Field Manager
Silbond Division, Home Decorators, Inc.
Newark, N.Y.

Enthusiasm is a desirable quality for any man in any job. But it is particularly vital for the many thousands of "outside" salesmen—part of an army of more than one million—who daily pump orders into the nation's small manufacturing companies. The need for keeping these men enthusiastic is a factor of which every thoughtful owner or sales manager of a small company is aware. Yet how to do it, is often a difficult problem for these executives. But the consequences of failing in this task may be far-reaching, as you can well imagine. Just how far-reaching can be illustrated by a conversation which recently took place at a service club luncheon between two executives of small manufacturing organizations.

● **How to Kill Enthusiasm.** "Old Man Masterson," said the older of the two, "taught me the importance of building enthusiasm in the right way. You remember, he was the president of Masterson and Co., and I worked for him. What you may not remember is that I was his top salesman for two years in a row. The first year nothing happened. But at the end of the second year, he called me into his office one morning—as it turned out to give me an award."

"An award? I thought he didn't believe in giving salesmen special incentives."

"He didn't. But he had grudgingly come around to the idea because most of his competitors did believe in it."

"I see. So, what happened?"

"He sat behind his desk stiff and unbending, and as stone-faced as ever. 'Here's something for you,' he growled, and pressed a piece of paper into my hand. It was an award, and it looked like a high school diploma. Well, I started to say thanks, but he was already back to shuffling papers."

The other man smiled understandingly. "I guess I know how you felt. What did you do?"

"Well, I knew that Arnold Brothers, our competitors, were on the lookout for 'bright young men.' I went over there the next morning. They hired me."

"I call that a happy ending."

"Sure, but the really happy ending came the following year. I did pretty well that first year. So one morning the sales manager tells me he wants to buy me a cup of coffee, and I walk unsuspectingly into the company cafeteria. And there the president, Jack Arnold himself, and all the employees, are waiting for me. And there goes Jack Arnold, telling everybody what a good job I had done, and how glad he was I joined the staff. And then, in addition, he hands me a check. Well, I felt pretty good that morning. I still remember that day every time I show somebody my business card, and he says, 'Oh, Mr. Spencer, you're the sales manager of Arnold Brothers.'"

Points of View

Of course, Charlie Spencer's story could superficially be viewed as an indictment of one man and his manners. In reality it has a broader meaning, as any thoughtful company executive will realize. Any man, in any job, needs occasional reassurance. He needs to be told and shown that his work is appreciated.

● **What Every Salesman Knows.** The need for reassurance is particularly acute in the case of salesmen. Today competition is growing fiercer between small manufacturing concerns, and, of course, competition from big organizations still further complicates and magnifies the salesman's problem. Now and then, like any man in any job, the salesman feels discouraged.

To carry out successfully his difficult assignment, he needs a continuous supply of enthusiasm; for enthusiasm is the spark which frequently means the difference between making and not making a sale. Therefore, the problem of how to maintain that enthusiasm in your sales force is a vital and ever-present one.

● **Keep Them Smiling, Keep Them Selling.** You yourself are the best judge of how to keep your men enthusiastic. The majority opinion among businessmen, however, seems to favor some sort of incentive system these days. At least this was true when Indiana University's School of Business and the National Sales Executives Inc., jointly questioned executives of small manufacturing concerns. The report, "A Survey of Special Incentives for Salesmen," showed that a majority of companies (442 out of 542 asked, with 30 not responding) called incentives excellent (252) or good (190). There were dissenters, of course. Thus 47 companies labeled incentives as merely fair; while 14 ranked them as poor, and 9 even termed them harmful.

The reasoning behind both pro and con arguments can be illustrated by quoting two sharply dissenting letters. One executive, on the pro side, put it this way: "A salesman will perform his usual customary way until he is offered some special incentive to do an extra job."

But another executive took issue with that philosophy. Wrote he: "Why put a premium on what should be a normal, honest sales effort?"

● **Salesmen Speak Up.** Well, how do the men themselves feel about incentives? One answer comes from the ranks of the Machinery and Allied Products Institute which represents the capital goods industries. Although most MAPI members represent big rather than small business their thinking should be of interest to all executives.

A recent survey of the institute's member companies revealed that just over 90% of the salesmen in the industry favor a combination of salary and incentives. The remaining salesmen were divided between those who favored straight salary (5%) and those who preferred straight commissions (4%).

Financial Techniques

The most common form of stimulating your men to greater achievement is that of offering some form of progressive payment for accomplishment. This can mean commissions, profit sharing, bonuses or salary increases.

● **Dollars and Incentive.** The president of company X, a small manufacturing concern, was determined to inspire his salesmen to greater enthusiasm for their work. One day he sat down and blueprinted a dollar-and-cents pay plan designed to put that desire into effect. He was sure it would succeed. It didn't. Why?

Here is the way his dollar incentive program worked. It offered 2% commission for the first $10,000 worth of sales, 1½% on the next $50,000, 1% on everything above that figure. But no noticeable increases in sales occurred. The president just couldn't understand it. Because he genuinely wanted to know what had happened, he cautiously questioned his men.

The answers he received were revealing. His people disliked the idea of the commission percentage going down as sales went up. As a result of his findings, he reversed the percentage schedule. His salesmen now received 1% commission on their first $10,000 sales, 1½% on the next $50,000, 2% for everything above that figure. The result was an upturn in sales, and a boost in salesmen's enthusiasm and morale.

● **Set the Limit High.** Enthusiasm and morale may be adversely affected if you put an arbitrary limit on salesmen's earnings. Even if few of them ever will reach the dizzying heights of spectacular success in selling, most will dream of doing so; and that dream, even if never completely realized, can carry some men to greater heights than they would attain without the utopian goal-in-the-sky.

● **Contests and Incentives.** In the realm of financial incentives, the sales contest probably ranks high in popularity. But before you start a contest program, be sure that you plan it well. Mainly, watch out for three factors: the award, the basis for the award, and the timing of the contest. Awards, of course, can mean either money or merchandise, although some people feel that merchandise is preferable because (as they see it) the winner gains greater recognition in the eyes of his colleagues and his family if he carries off valuable merchandise instead of a check.

(1) Objectives: Each contest should have an important objective. For instance, you may want to overcome the post-Easter slump, to combat summer sales resistance, or to help introduce new products. Whatever the reason, be sure to communicate ground rules in detail, and announce contest results as soon after the contest ends as possible.

(2) Prizes: This is an important factor in the success of any contest. Well-informed people in this field insist that the prizes should be useful for the winner's wife (or husband) and family, and not only to the winner. This, they say, is particularly true of the first prize which, in a major contest, might well be a trip to Europe for the winner and his wife (or husband). But even the second group of prizes probably should be designed for use by the entire family. They might include home appliances or furniture; they might even include jewelry for the winner's wife. A third group of prizes can be designed primarily for the winner's own use, and might include personal jewelry, luggage or clothing, to name a few items.

(3) Planning: There are, of course, several ways of running a contest. You can simply let the salesmen compete against each other, and give the prizes to those who sell the largest amount. This is easy—and deceptive. In this type of contest, the winner may not have exerted any extra effort at all. He may merely have been lucky: His territory has been expanding; more people have moved into the area, and some of these additional people have by the law of averages become additional clients of his.

Well, what about establishing a minimum sales level (in terms of sales volume or percentage increase) which a man must reach before he can be eligible for a prize? This may work better, but you may also find that in some years the percentage increase in your sales will be low. In such a year, the winner will be a man who is a low-seller, but just happens to have a slightly better score than the next man. Perhaps at the end of that year you may want to skip contests altogether; or perhaps here is your chance to announce that you will not again have a contest unless sales and, of course, profits, pick up appreciably.

(4) Warning: One thing to avoid is the all-or-nothing, one-prize contest. In such a contest, the best man will win—but good men may feel resentful and cheated.

Non-Financial Techniques

So far this article has discussed financial ways of keeping your salesmen enthusiastic. But, of course, there are also non-financial methods you can use. These are designed primarily to improve a man's status or position within his group and to thus give him an even greater urge to succeed.

● **Awards.** Lapel pins, trophies, rings: They are tokens of recognition of the achievement and enthusiasm displayed by your sales force. But remember the case of Charlie Spencer! So, if you want to give awards, be sure to present them in a dignified way. Otherwise, they can do more harm than good.

Scrolls and diplomas, too, are increasingly being used as tokens of recognition; here, too, the watchword is: good taste. Not only should the awards themselves be in good taste, but so should be the publicity given to them in the company newspaper or bulletin. Most importantly, the presentation of the award should be made by you, as the head of the company, or by your sales manager. This ceremony, of course, can take place right in the plant—perhaps in the cafeteria—or perhaps at a special awards dinner.

● **Plant Visits:** If you have a number of salesmen who operate from bases away from the home office, you may want to give those men an opportunity to visit your plant so that they can meet with you and your executives, and have a look at the plant operations. To cut down on the expenses of such meetings, you might call in your top salesmen just when you are ready to put a new product on the market. That way their trips home pay off in more than one way, and chances are they'll return to their sales jobs with renewed enthusiasm for their company and their jobs.

● **"The Charmed Circle."** One company with a fairly large distaff sales force boosted employee-enthusiasm and company sales by an unusual device. Those who achieved a certain sales goal were brought to the home office for a ceremony in which a rose bush was planted for each winner in an area called "The Charmed Circle." Attached to each winner's bush was a small plate bearing his name, achievement, and date of the ceremony.

● **Are You Communicating?** If you want to keep your salesmen enthu-

SUMMARY

What is the quality which, above all others, a salesman—particularly a salesman for a small company—needs? Enthusiasm. Enthusiasm is the spark that may mean the difference between making and not making a sale. It is also the quality which many top executives and sales managers in small manufacturing firms find it difficult to maintain in their outside sales staffs. Well, how do you do it? How do you keep them enthusiastic?

There are, of course, several answers, and you will have to make your own choice as to the method best suited to your firm and circumstances. But there is widespread agreement among well-informed people that special incentives—and they may take the form of money or awards—are playing an increasingly important part in management's drive to keep that special sales spark alive. This Aid discusses both financial and non-financial incentives. And it stresses the need (apart from any incentive plans) to let your sales people know that you appreciate their efforts. This article is presented through the cooperation of the Small Business Administration.

siastic, it's not enough to hand out money and awards. You have to keep them informed, let them know that they are an integral and important part of your organization. Perhaps your company is big enough to afford a newspaper; if not, a bulletin-type publication can do the job. But—fair warning—whatever medium of communication you use, use it to best advantage. You can't generate enthusiasm if you fill the paper solely with long lists of sales quotas. Of course, they belong; but so does more personalized information, written in a light and breezy vein. You might also include evaluations of individuals' outstanding performances, information about your products (particularly new lines) and announcements of sales contests. But whatever you print, keep it fresh, keep it frank, keep it friendly.

The spoken as well as the written word can engender enthusiasm among your salesmen. If you have salesmen permanently located in other cities, it's a good idea for your sales manager to visit them in person regularly. Such personal contact with their immediate boss may solve many of their work-problems, and will help to overcome the salesmen's out there "in-the-blue" feeling. Even if your salesmen operate out of your company offices, the sales manager who takes time out to visit with his staff will create a feeling of solidarity, and will make his men realize that they are appreciated both as employees and as individuals.

Occasionally you may want to have a sales meeting or, if you have a fairly large staff with salesmen who operate in different geographic areas, a convention. If you do, be sure to plan ahead. Be equally sure that your salesmen will come away from such meetings with more to remember than a pep talk. Pep talks generate momentary enthusiasm, but they seldom solve problems or induce a sustained feeling of enthusiasm for the work or the company. So, in your own speeches be informative, be creative, be forward-looking; impress upon your executives, too, the need for a pep-plus approach in their formal and informal talks with the salesmen.

● **Costs and Consequences.** Any program you undertake will cost money. If wisely spent, the outlay will yield financial benefits to your company, and c r e a t e increased enthusiasm among your salesmen. Programs in the financial c a t e g o r y—including commissions and contests—should result in increased sales and, of course, profits.

The results of some of the nonfinancial programs, of course, may not be reflected quite so directly and dramatically in your company's sales record: But think of them as a long-term investment in salesmen's morale. Good morale, after all, is a necessary basis for enthusiasm. And it is enthusiasm which will carry your salesmen along in their task of selling your firm and its products.

TEXAN

(Continued from page 9)

points out, "and obviously the profit is much more. We have only a limited amount of time to devote to selling outside the store, and we logically concentrate on volume buyers when we do have the time."

The company provides a soil analysis service for all customers and prospects who need it, and this service has been at least a minor factor in lining up volume users, Mr. Oberhaus says.

WEED CONTROL GUIDE

CORVALLIS, ORE. — An up-to-date weed control guide for Oregon farmers, orchardists and home gardeners has been published by the Oregon State College extension service. New chemical controls that have passed recent field trials are included in the booklet, "Weed Control Recommendations for Oregon."

OSCAR & PAT

The day was sunny but not very hot when a tall, dark-haired and hatless young man, carrying a briefcase, came jauntily into the salesroom. Pat was out trying to sell plowdown fertilizer, Oscar was at his desk, with his back toward the door, and so the young man approached plump, ulcerish Tillie Mason, the bookkeeper.

He turned a dazzling smile upon her and said with excellent enunciation, "Good morning! I would like to talk with the owner of the company? Is he in this morning?" He leaned forward expectantly, anticipating a reception harmonizing with his personality presentation.

Womanlike, Tillie tingled a little at s u c h concentrated attention. "There are two owners," she said softly, wondering why her swain, Dave Schuster, didn't give her attention like this. "Pat McGillicuddy is out, but Mr. Schoenfeld is over there." She indicated Oscar's broad back.

The salesman smiled again. "Thank you," he said. "Very much!"

Again Tillie felt a little tingle in her shoulders and spine and found it difficult to go back to her bookkeeping.

Jauntily, the salesman approached the wooden railed enclosure which housed the executive quarters of Oscar and Pat.

"Mr. Schoenfeld?" he said clearly with salesmanlike enthusiasm.

Oscar swung slowly around on his swivel chair and gazed coldly at the young man. "What do you want?" he asked suspiciously.

"I'm Percy Harrison!" the young man said eagerly. "I have just joined the office equipment department of the Journal & Ledger Co. We have greatly expanded our equipment and furniture line. You know in this modern progressive age we need to modernize our offices just as we modernize our homes. Impressions mean so much these days in getting more customers and p l e a s i n g them." He coughed. "We have some lovely furniture in our store, sir. I have a mahogany office desk which could replace that old pigeon hole desk and an elegant posture type chair with air foam rubber cushion." He smiled eagerly, questioningly as t h o u g h tempting Oscar.

"We are not buyink nottink," Oscar growled. "Ach, what's the matter with a pigeon hole desk? It is paidt for. It has lots of drawers and places to put things. Andt I can roll down the top and lock it at night to keep snoopers oudt."

"But a new nesk would be much more modern and up-to-date," persisted the young salesman, who could not conceive of anything but modern methods and equipment. "Your customers would notice it. They would say, now there is a successful business man who has good furniture and equipment to give us better service."

"Are you crazy?" Oscar a s k e d sharply. "I don't care what the customers think. Up-to-date? I don't want to be up-to-date on furniture and equipment. Ach, all I want is for customers to be up-to-date in payink their bills. That's what's important."

"Oh, you don't have to have cash to buy this desk," pointed out the eager young salesman as though he had uncovered a trump card. "You can pay it off in 18 or 24 months. You'll hardly feel the expense, and all that time you'll be reaping the benefit of the new desk."

"Young man," Oscar thundered, "have you bought a home?"

The young man straightened. "Yes, I have a new ranch type home. Modest, that is, but modern."

"Is it paidt for?"

The young man blinked. "Why, no I'm buying it on a 30-year plan like everybody else."

Oscar's lips were tight. "And the the furniture, andt the appliances, andt your car?"

The salesman licked his lips. "I'm buying those on time, too. I can make the payments if I keep working."

"Andt if the country goes kaputt like it didt in the last depression?"

"Oh, it won't. Everything is more stable now. There are controls, pensions and other things. This whole country is building on credit. It's good for the economy!"

Oscar's face grew darker. "It is not goot for the economy. It is rotten. Too many people buyink on credit. The whole country is gettink in debt faster and faster and taxes go higher. Everybody wants to spendt, spendt, spendt! Nobody thinks of safing anymore."

"But—but if people didn't buy on credit, in anticipation of future income and profit, the whole country would—would stagnate."

"Ach, let it stagnate for awhile," Oscar said. "It would be goot for us. It would teach people not to be so wasteful. Let people liff lower on the hog. Let them pay their debts. Let them cut out the luxuries. My wife andt me we don't own anybody nottink. We are all paidt up."

The salesman looked incredulous. "Isn't it awfully hard to live like that? No fun."

"Fun!" Oscar bellowed. "Who saidt people shouldt haf fun? They shouldt work hardt, pay their bills and safe money. Fun ain't got nottink to do with it. New furniture for the office —phooey."

The salesman looked like he was coming out of an electric shock treatment. His lips moved, but he said nothing.

"Ach, I got a partner chust like you," Oscar said mercilessly. "He wants to spendt, spendt, spendt all the time—if I would let him. If I diedt first thing he would do would be to buy all new furniture for this office and store. He would buy a new safe. He would put in fancy lights and gif farmers free coffee and doughnuts all day long. He would advertise and promote, and you know what wouldt happen?"

"What?" asked the salesman.

Oscar sneered. "He wouldt be broke inside a year—busted! Bankrupt! He ain't safed nottink all his life. When I am gone—phooey with this business. Somebody will buy it at an auction."

The young salesman, not now so eager, but rather dazed, picked up his shining new briefcase. As in a trance he walked out of the railed enclosure and headed for the door. In fact he walked unseeingly right to the door marked "Ladies" and Tillie called out in time, "The entrance is there, sir."

"Oh," said the salesman, blinking.

Outside, he stood uncertainly, as though not seeing his sporty little coupe. "What w e n t wrong!" he muttered. "My technique worked so well with others. Oh, I hope I don't meet any more prospects like that. If I do, maybe I'd better go back to teaching."

OVER THE COUNTER

(Continued from page 9)

livestock and to improve the foundation herd.

6. He will have to buy only the best of certified seeds and adapted hybrids when available.

7. He will have to increase production per man through wise use of farm machinery and labor saving techniques.

8. He will have to make wise use of farm credit, cut per unit cost, and increase yield per acre or per animal unit.

Following are some present day viewpoints on use of credit by farmers. This will affect a dealer's business:

a. Growth in capital investments on commercial-type farms, now approximately five times what it was in 1940, will continue to increase.

b. Use of credit. Now the highest ever although representing only 11% of total farm assets. Use of credit will grow still further. Full debt-free ownership of the larger commercial units may be declining as an accepted goal.

c. Increasing emphasis on financial management in extension education and research will continue to expand.

9. He will have to keep a good set of farm records and study them carefully to select alternative courses in the future and find out which farm operations are making money or losing money.

10. The farmer of tomorrow will have to be an active participant in his farm organization, so that his voice will be heard in the state and national capitals, or wherever it needs to be heard.

what's NEW?
Broyhill No. 8 Transfer Pump
A complete unit for transferring liquid fertilizers 100 gal. per minute. Self-cleaning, non-clogging. Centrifugal p u m p coupled to engine on carry-stand. Write for c o m p l e t e details, prices and delivery date, to:

the Broyhill COMPANY DAKOTA CITY, NEBRASKA

REMEMBER TO ORDER
CHASE BAGS
There's None Better!

Measuring Performance Important to Dealer

By W. S. JACKSON
Grasselli Chemicals Department
E. I. du Pont de Nemours & Co.

Every manager at times wonders whether his policies on credit, pricing and adding a new line or dropping an old one are sound. This presentation should help provide some of the answers and may provide a better understanding of the relationship of a farm supply dealer's activities to over-all profit performance.

This is a sales approach to operational performance. The system to be outlined is based on the sound principle of making a reasonable return on investment.

All feed, seed and farm supply businesses have certain things in common —such as buildings, equipment and fixtures. All of these businesses are engaged in selling products or furnishing services that will be acceptable to customers.

This means that more than one enterprise may be producing or selling the same product and that the customer has the right to choose from which he will buy based on such factors as price, performance, quality and service.

Each of the individual enterprises is constantly making investments aimed at improving one or more of these things that influence customers' choices. Each is constantly trying to get a greater share of the business. The proof of your success in the marketplace is determined by how well you are able to anticipate and meet the needs and desires of your customers.

The enterprises that satisfy customers' desires along these lines will have enough money coming in from sales to pay their bills—salaries, wages, supplies, taxes—and have some left over. The money left over constitutes the earnings derived from the investments, all aimed at providing the things customers want. The earnings show the owner of the business whether or not he has been successful in meeting the needs of his customers.

Whether your business involves one man or a thousand men, money is invested from which a reasonable return can and should be expected.

Now let's consider how you can use return on investment as a measure of performance. The article will attempt to accomplish two things: (1) To develop a procedure your company can use to measure its operating performance; and (2) to consider how this procedure may be used to analyze and appraise prospective performance of new investments.

The system is used by many businesses, especially when you are considering diversification into a variety of products. This system will not only give you a way of analyzing operating investment but will also provide a basis of comparison with other investments, engaged in different activities. In effect, this is a yardstick by which you can measure your performance. The formula which is used contains all the factors that have an important bearing on return on investment.

Earnings alone will not tell the complete story of how well an operation is performing. For earnings to be a meaningful indicator of performance, they must be related to the total investment necessary to produce those earnings. When they are related to this investment, we get a measure called per cent of return on investment, which is the key indicator of performance.

However, before a business can determine its earnings for a given period, it must know how much money it had coming in from sales to customers and how much it cost to operate the business during the period when those sales were obtained. Earnings are merely the dollars left after the cost of materials, production and marketing is taken out.

Since this system is used to analyze performance as well as to calculate return, more information to aid in that analysis must be provided. Obviously, earnings are going to change with a change in either sales or costs. Sales, in turn, may go up or down because of a change in selling price, change in market, competitive situation or some other factors, which are more or less obvious.

However, it is difficult to know the cause of a change in costs because it includes all of the expenses of doing business. Therefore, costs are broken down into three major categories.

These are: (1) Producing or acquiring the product and getting it ready for delivery; (2) selling (which includes locating the customer, developing the market and providing the many services that are needed); and (3) the administrative function which includes the over-all coordination and management of the company's activities.

Some of the items which might be included in production costs are: Raw materials, power, labor and overhead (depreciation). Administrative costs might include office operations, executive salaries, certain licenses and taxes, trade association activities and good will efforts.

Based on your experience, what do you think are some of the items which should be included as a part of selling expense?

You might list: Cost of processing orders, warehousing, salesmen's salaries, travel expenses, sales technical service, advertising and sales promotion.

By breaking down the various factors which affect earnings in this way, the cause of a change in earnings can be located.

Total investment in this formula refers to operating investment. It is divided into two parts: Permanent investment and working capital. The term permanent investment refers to buildings, tools, equipment and other facilities required to carry on the business. It is significant that, for the purpose of comparing the performance of operating investments using this formula, all facilities included in permanent investment are carried at original cost as long as they are in use or are retained for possible future use.

Working capital is the money needed to put permanent investment to work producing and delivering products. It is made up of several components. One part of working capital is inventories. This includes inventories of both raw materials and finished products. Inventories represent money that is tied up which could be used in some other way to earn a return if it wasn't required here.

A second part of working capital is accounts receivable. Accounts receivable represent products that have been produced and delivered to customers for which payment has not been received. They are usually equal to about 30 days' sales.

The last component of working capital is cash. Cash is the estimated amount of money that would be required to purchase materials, meet payrolls and otherwise finance operations for the period covered by the accounts receivable.

It is apparent that each of these items of working capital represents money that is needed to carry on the business and is a necessary part of total investment.

This is enough information to calculate a return on investment for any given period of operations. With the accounting system set up to provide this information, the return on investment for an operating unit can be determined.

Here's an example: Let's assume we are operating a business and we want to know how the business performed over the past year. To do this, we'll need some figures in the main part of the formula.

To keep the arithmetic from getting too involved, we'll use two and three digit numbers. You may add zeros to the numbers to make them fit your operation.

Let's suppose that in the year in which we are interested we have $75 tied up in the working capital (total of inventory $25, accounts receivable $15 and cash $35) and that the total average value of facilities—buildings, tools, and equipment—for this year was $145—which means that the total investment for the year was $220.

Let's assume, further, that as a result of using these facilities over this period we have sales of $200 and all of the costs of performing these functions were made up as follows:

Production	$115
Selling	14
Advertising	6
Total Costs	$135
Total Sales	$200
Less Costs	135
Earnings	$ 65

Dividing earnings by the total investment ($220), we get a 29.5% return on investment before taxes. In reviewing and examining performance within the company, return on investment before taxes is always considered. There is an obvious reason for doing this since tax rates vary from time to time and in order to make comparisons of current performance with past performance, income taxes should be eliminated to prevent distortion of results.

It should be remembered that the corporate income tax at the current rate should be deducted to get the net return after taxes.

What we have up to this point is sufficient to calculate return on investment, but this system is also used to analyze performance and to appraise performance of possible new investments.

To provide additional information for use in making such analyses, each side of this formula is carried forward one more step. The investment side is carried forward by dividing sales by total investment to get a measure called turnover. Turnover is a measure of how hard an investment is being worked. In our example, we have a total investment of $220 and sales of $200. The turnover would be 91%. Turnover serves a definite purpose as a measure of performance. If there is no change in selling price, an increase in turnover indicates that the business is getting increased sales out of the same plant and working capital.

One interested in selling merchandise of course wants to know how he fits into this over-all picture. With that in mind, let's look more closely at this turnover side of the formula and ask ourselves what can be done to improve turnover?

For example, accurate forecasting can save carrying excessive inventories, or running into costly shortages. We can also encourage customers to discount their bills to reduce accounts receivable and thus reduce cash requirements.

The earnings side of our formula is also carried forward another step by dividing sales into earnings to get a measure called profit margin. Profit margin shows the number of cents of profit on each dollar of sales. In our example we earned $65 on total sales of $200. We thus made a profit of 32.5¢ on each dollar of sales income.

Profit margin is actually a measure of how effectively operations are carried out. If there is no change in selling prices, an improvement in gross profit margin indicates that the cost in proportion to sales dollars is being reduced.

Profit margin is affected by changes in selling prices and by anything that raises or lowers the unit cost of the product. What are some of the things which can be done to improve profit margin?

The most obvious is to increase sales volume. Selling expenses can be reduced by making each sales effort more effective. Accurate forecasting, again, will assist production in operating at the most effective and economical levels. Here it is interesting to note that you multiply profit margin by turnover to get the return on investment ($200/220 = 0.91 \times 32.5 = 29.5\%$). You would get the same result if you divided earnings by total investment because sales cancel out. Obviously, anything that affects profit margin or turnover has a direct effect on return on investment. The two added steps, determining profit margin and turnover, provide a more comprehensive picture of performance.

It was said earlier that return on investment before taxes is used to measure performance because taxes are outside the control of those who have custody of the investment. This also eliminates the variable which would be introduced by varying tax rates and permits accurate comparison of past and current performance.

Let's determine the return after taxes. The present rate of federal income tax is 52% of earnings. In this example, earnings after taxes would be $31. Dividing this by the total sales of $200, a profit margin after taxes of 15.15% remains. Turnover is not affected by taxes so to get the return on investment after taxes you multiply $0.91 \times 15.5 = 14\%$. Earnings after income taxes are net earnings and are available for dividends and reinvestment.

As this story is built up it shows the complete formula around which the company's system of analyzing operating performance is built. Let's go a little further and see how this system is used for analyzing performance.

Again, some figures are necessary. Small numbers will be used to simplify figures but you can add as many zeros as you like. Even though the numbers are small, they represent typical relationships for companies as a whole.

Assume that, as a result of intensified, selling efforts you increase sales by 10%. Let's consider how this affects profit margin and turnover. The new sales figure would become $220. Obviously, if you increase sales, costs are also going to increase. This increase in costs will be in the production area and will include increases in raw materials and labor requirements. For the sake of example, let's say that the 10% increase in sales causes labor and material costs to increase from $115 to $125. The new total cost figure then becomes $145. Again subtracting costs from sales we find that earnings have increased to $75 and the profit margin becomes 34%.

Looking at the turnover side of the formula, let's assume that we've gotten this increased production from the existing facilities, so permanent investment does not change. However, working capital requirements will increase. Inventory requirements will increase from $25 to approximately $27. Accounts receivable will become $16 and cash requirements will increase from $35 to about $37. Working capital then becomes $80 and total investment becomes $225. Dividing the new total investment into the sales figure, $220, it is found that turnover has increased to 98%. Multiplying the improved turnover times profit margin gives a new return on investment of 33.3% before

taxes instead of the original 29.5%—certainly an impressive increase.

Now let's take a change in the investment section and trace it through. Again, some figure are necessary. These figures, like the others used, represent the relationship that typically exists in the company as a whole.

Suppose you decide to give your customers 60 days to pay their bills instead of 30. In other words, you double your accounts receivable. In the example, accounts receivable then becomes $30. In addition, cash was defined as the estimated amount of money required to purchase materials, meet payrolls and otherwise finance production for the period covered by the accounts receivable for your company. In practice the cash requirement would probably not increase in direct proportion to the accounts receivable.

For the sake of this example, let's say that cash increases from $35 to $55 as a result of doubling accounts receivable. Total working capital then becomes $110 which increases the total investment to $255. Assuming that sales remain the same (in other words, you don't get any more business as a result of allowing your customers more liberal terms) turnover is reduced to 79%. Multiplying this reduced turnover times the original profit margin (32.5%) gives a return on investment of 25.6%.

Let's consider then, how much you would have to increase sales to keep turnover constant if you decide to give your customers 60 days instead of 30 days to pay their bills. A further calculation would show that it takes about a 10% increase in sales to offset the effect which doubling accounts receivable has on return investment. Obviously, accounts receivable play an important part in measuring the performance of your operation.

Let's look now at the effect of cutting price. Suppose you decide to drop the price by 10%. In other words, your sales dollars decrease from $200 to $180. Now, it will cost you just as much as before to sell your product; that is, your costs will remain the same. But earnings have dropped to $45. This $45 divided by lower sales of $180 reduces the profit margin to 25%.

Some changes take place in the investment side of the formula, too. Because the value of the finished product is lower, the inventory figure will fall slightly, say down to $24; similarly, both accounts receivable and cash will be a little lower. Let's say they become $14 and $33. Thus, the new figure for working capital becomes $71 and the total investment drops slightly, to $216. But this apparently favorable situation of having a lower total investment is actually not at all favorable. Locking at the lower figure for sales $180 and dividing it by the new total investment, it is apparent that turnover has dropped to 83%. Multiplying turnover by profit margin, the new return on investment (before taxes) is now 20.8%, a very considerable drop from what it was before the price was cut.

You are probably saying to yourselves, "Oh, yes, but we'll get more sales at the lower price and that will put us back where we were." Let's see if that's true. Let's assume that at the lower unit price you build your sales. That will take you back to a total sales figure of $200, but, without getting involved again in the actual figures, here is the effect. Under these conditions there is a return on investment of 26.1%. Even though sales volume has been built up by 10% with the lower price, earnings and return on investment are poorer than they were before the price was cut.

You would probably take a different approach in using this formula to appraise performance than has been used in these examples. You would first note a change in the per cent return on investment for an operation. You would then examine profit margin and turnover to locate the cause of the change in return on investment. By following through the formula you could determine the specific item causing the change.

Profit is the first requisite for the success of any kind of business. No one wants to be associated with an organization which does not earn a satisfactory profit. Without profit, there can be no job security, no opportunity for advancement and no employee benefits.

Starts Garden Center

LUBBOCK, TEXAS—The Wolfe Nurseries of Stephenville, Texas, is starting work on a large garden supply center here.

With more than 300-ft. front, the nursery plans to build one of the finest garden stores in west Texas. It will feature nursery stock, fertilizer, insecticides and all types of garden and lawn equipment.

Wolfe Nurseries is a large chain system and has branch stores in central and west Texas.

Trade Winds From California

SUNNYVALE, CAL.—Fred and Goichi Yonemoto have become partners in the Yonemoto Nurseries in Sunnyvale.

●

BAKERSFIELD, CAL.—A new garden and farm supply store has been opened at 7500 Rosedale Highway, Bakersfield, by Lillie L. Rylie.

●

MANTECA, CAL.—John Gunthmiller has applied for a permit to open a fertilizer bagging plant on Spreckels Rd. in Manteca.

●

NAPA, CAL.—Felix J. and Norma G. Holzreiter have opened the Holzreiter's Gardens as a wholesale nursery sales operation at 3504 Mt. Veeder Rd., Napa.

●

APTOS, CAL.—Edward P. and Elizabeth Wilson are now the principal partners in the Beth-Mar Gardens Nursery in Aptos, and Hugh M. Keturakat is a limited partner.

●

MODESTO, CAL.—Fred L. Marriott and Grace L. Marriott are now partners in the Marriott Nursery in Modesto.

●

SUNNYVALE, CAL.—Anthony K. and Eva J. Mellow have founded Mellow's Nursery at 311 North Mathilda St., Sunnyvale.

●

SANTA CRUZ, CAL.—Morningside Ranch Nursery on Robles Road has been opened here by Stanley J. and Elizabeth Loskofski.

●

GUALALA, CAL.—Blue Horizons Nursery is scheduled for a September opening by Howard Warner.

●

MARYSVILLE, CAL.—Joseph Benatar is building a nursery at East 19th St. near Covillaud Rd., in Marysville.

●

MILL VALLEY, CAL. — Jackson Williamson and Helen Newbauer have joined in founding a nursery at 1046 Highway 101.

Books on Fertilizers And Their Use

FUNDAMENTALS OF SOIL SCIENCE—Third Edition

By C. E. Millar, late Professor Emeritus of Soil Science; L. M. Turk, director; and H. D. Foth, associate professor of soil science, Michigan State University.

This text completely revises and brings up to date the second edition. Special attention is given to progress made in the basic principles of soil science since the publication of its predecessor. This edition includes more emphasis on soil texture and the concept of the texture profile, more discussion of the influence of the soil forming factors on soil development, and more facts about clay minerals to provide a clearer understanding of the differences in the behavior of soils. 496 pages, illustrated. 6x9¼"... $7.75

SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following backgrounding course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. Dr. Tisdale is Southeastern regional director of the National Plant Food Institute and Dr. Nelson is with the American Potash Institute. 430 pages, cloth bound $7.75

PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages $6.50

THE CARE AND FEEDING OF GARDEN PLANTS

Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book, it is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including 37 pages in full color $3.00

AUXINS AND PLANT GROWTH

A. Carl Leopold

A 366-page book, complete with bibliography, appendix, and index, discusses the fundamental and applied aspects of growth hormone and synthetic auxin action in plants. These are of interest to all workers in agricultural chemicals—for weed control, flowering control, fruit set, flower or fruit drop and plant propagation. The text is divided into two sections, (1) fundamentals of auxin action, and (2) auxins in agriculture. These cover developmental effects of auxins, the physiological and anatomical effects of their application, the chemical nature of growth regulators, and methods of applying auxins and their persistence in plants and soils. Other subjects covered: rooting, parthenocarpy, flower and fruit thinning, control of pre-harvest fruit drop, flowering, dormancy and storage, herbicides, miscellaneous uses of auxins, and potentials of auxins and auxin research. Published by University of California Press..... $5.00

ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE

By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III— Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful answers to problems of practical application $1.95

HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color $4.50

USING COMMERCIAL FERTILIZER (1952)

Malcolm H. McVickar

Dr. McVicker is chief agronomist for California Spray-Chemical Corp., Richmond, Cal. The books deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trade-element plant foods. 208 pages, 106 illustrations, cloth bound $4.00

COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955)

Gilbeart H. Collings

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 522 pages $9.50

APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)

M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated $3.00

MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data $2.50

Order From Croplife

Reader Service Department
P.O. Box 67
Minneapolis 40, Minn.

(enclose remittance)

WEED OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board

Common Mullein

(Verbascum thapsus)

How to Identify

Mullein is a biennial plant, reproducing only by seed. It is usually found in dry pastures, meadows, neglected fields and in waste places. In its first year, the plant produces a large taproot, a large number of lateral roots and a rosette of large, hairy leaves. During its second year, the plant sends up its characteristic coarse, rough, hairy flower stalk which ranges from 4 to 8 ft. tall. Most of the leaves are confined to the lower portion of the stalk, and all leaves are covered with long branching hairs. Flowers and seed pods are produced on terminal spikes. Each seed pod contains many tiny, brown, pitted seeds. Other common names, used in various parts of the country, include velvet dock, Jacob's staff, flannel leaf, flatwort, big taper and candlewick.

Characteristics of Mullein

This plant is not particularly harmful, except that it is prolific and robs soil of moisture and nutrients needed for more valuable crops. The plant is a native of Europe, but is widely distributed throughout the U.S. Though found in pastures, it has no value as forage. It is mildly irritating to animals, poisonous only if taken in large quantities. It flowers from July to October in some areas. The plant does not persist in cultivated fields.

Control of Mullein

Specific chemical control is described as "difficult" by various authorities because of wide scattering. However, some herbicides will kill the plant. Most recommendations from states where the weed appears say that cutting the plant before seeds form will control it. One authority says "hoeing or spudding out the rosettes below the crown will avoid the necessity of later attention." Because of new plants from seed in the soil, mowing or cutting may be required for two or three years for complete eradication.

Illustration of Common Mullein through courtesy of Dow Chemical Co., Midland, Mich.

RESPONSIBILITIES

(Continued from page 1)

sibilities must also differ greatly. Responsibilities of each of the three persons concerned differ in any one case, and the responsibilities of the salesman, for example, differ in each case in which he is involved.

So things get a little complicated when one tries to determine the responsibilities of a pesticide salesman. Furthermore, the concept of a responsibility is frequently a moral one, and we can get way over our heads in a short time if we start to outline what a salesman's morals should be.

However, we often use the idea of responsibility in another way. We must drive our car legally, or we may lose our driver's license. We are held responsible to pay our taxes. We recognize that we are responsible to meet a number of obligations, and that if we don't meet them, we are in trouble. In this sense, a responsibility is something we are called upon to answer. Let us assume, therefore, that the responsibilities of a pesticide salesman are the things he may be called upon to answer and for which he may be held accountable.

Salesmen Commonly Blamed

This is a most appropriate concept. As we observed at the outset, the question of responsibility only comes up when something has gone wrong. Damage has occurred or a person has been injured, and someone is looking for someone else to pay for the loss. Farmers are notoriously poor, pest control operators are not spectacularly wealthy, but it is popularly believed that pesticide manufacturers have money to burn. Consequently when responsibility is to be fixed and a bill is to be settled, everyone looks hopefully at the pesticide salesman. He is what insurance men call a target risk. He is frequently blamed, justly or unjustly, for mishaps with pesticides, and he is expected to pay the costs. He is frequently called to answer for an accident, which is another way of saying that proper use of a pesticide is commonly regarded as his responsibility.

The broad interpretation of the responsibilities of a salesman, the fact that he is so frequently blamed for accidents involving pesticides or for their failures, is really a recognition of the important role he plays in use of these important chemicals. All surveys of factors influencing farmers' use of pesticides agree on the predominant place of the salesman over "official" recomendations, technical literature, and other sources of information. He is looked upon as a reliable authority in use of pesticides. He is expected to know what they will do and what they will not do and, consequently, he is expected to know their capability of causing trouble.

Most of the complaints made about pesticide salesmen do not charge them with deliberate misrepresentation, which is a misdemeanor according to Section 1066.1 of the Agricultural Code and punishable as such, but rather they charge salesmen with failure to point out hazards, to make clear some of the possible things that can go wrong with their products. They charge him with sins of omission, and failure to do a full job, an unawareness of his responsibilities.

If a salesman wants to know what might in any case be regarded as his responsibility, he can get a pretty good idea by thinking about everything that could possibly go wrong. If he knows what can go wrong, he can make sure that the hazard is understood by the person that he regards as responsible in a particular instance. In many cases, it is discovered too late that the opportunity or likelihood of the accident occurring was not foreseen by the farmer, the operator, or the salesman. So ample consideration of what can or is apt to go wrong in any application may remind everyone of what might later be regarded as his responsibility.

With this in mind, what are some of the things that can go wrong in a pesticide application?

Legal Requirements Must Be Met

Does the pesticide meet legal requirements? Has the label been accepted and the product been registered?

Is it being delivered in an original unbroken package with a proper label? Delivery of material in an improperly labeled container, delivery of a remnant of material left over from a previous job, or any other irregularity in packaging leaves the material wide open to suspicion. Incidentally, it's a good idea to reread labels occasionally and not take them for granted. It is sometimes surprising to find something there that had been completely forgotten since it was first read several seasons earlier.

Is the pesticide subject to any special requirements? If it contains a chemical classed as an injurious material or an injurious herbicide, has the necessary permit been secured from the county agricultural commissioner and has the user provided a signed statement that he has a permit and given its number?

Does the proposed application conform with county regulations and county recommendations? These requirements and recommendations differ in different counties. A salesman should be familiar with the ones in the particular county where the material is to be used.

Has the product been registered for the particular use in question? If it has not, a pest control operator cannot apply it unless the farmer gets a special authorization from the Commissioner.

Recommendations Should Be Followed

Is the proposed usage in accord with the recommendations and precautions on the label? If it is not, a salesman should give the matter a little more thought to be sure he is right.

Is the proposed application at variance with recommendations of the University of California or U.S. Department of Agriculture? A salesman can be different and still be right; but if he is different and something goes wrong, he might find it difficult to justify himself.

The Pest Should Be Considered

Is the pest present? This is not as silly as it might sound. Among the charges leveled at salesmen is that they have recommended an application of a pesticide when the pest was not even present.

Is the pest in a stage suitable for control by this pesticide? An application for aphis before the aphis have arrived in suitable numbers, or an application for cabbage looper before the worms have appeared, may be ineffective. On the other hand, delaying application until the aphis have curled the leaves or cabbage loopers have become nearly fullgrown may also fail to control the pests. Proper timing of a pesticide application can be very important.

Is control of this pest at this time economically desirable? It is sometimes said that control of an insect was not really needed in a particular instance and critics of a salesman say the pest was reaching the end of its destructive period or that predators or parasites were establishing adequate control when the salesman recommended treatment. For example, an infestation of russet mites beginning late in the season on tomatoes may not require treatment at all.

Is the formulation effective for this pest? Sometimes a dust is effective but a spray is not, or vice versa. A formulation with oil might be effective when a wettable powder is not.

Honeybees Should Not Be Endangered

Will the material injure honeybees on the crop plant to be treated? Certainly a salesman should know what effect his products have on honeybees. He should be familiar with the grouping of chemicals according to their hazards to honeybees as shown in the University of California publication, "California Agriculture," for December, 1958.

Will it injure honeybees on an interplanted crop or cover crop or on bordering flowering weeds? Occasionally there have been cases where the crop primarily treated was not in bloom but the pesticide caused severe losses of bees working in other blossoms incidentally poisoned by the spray.

Does this application require notification of beekeepers? If a salesman has any doubt he should check with the county agricultural commissioner for the requirements in the particular county.

Livestock Should Not Be Endangered

Will the material injure livestock that might be admitted to the property after treatment? If the pesticide is a persistent type, it might present a hazard to livestock for some time after application.

Will the material be detrimental if crop residues are fed to livestock? This has become an important and common problem. Mere traces of DDT and many other pesticide chemicals on the feed of livestock can contaminate milk or meat with illegal residues. Sweet corn stover is usually so contaminated with pesticides that it cannot be used as feed. Pea vines, beet tops and cotton trash may be similarly unfit for feed when treated in certain ways. In treatment of almonds, for example, a choice may be made between pest control programs depending upon whether or not the hulls are to be used as feed. If a certain pesticide imparts an unacceptable residue on the hulls, the salesman should make sure that the farmer knows it beforehand.

Persons Should Be Protected

Is this application likely to cause trouble by drifting into houses in the treated area? Occasionally an application of a certain chemical cannot be made because the planting surrounds a house in which people are living. In such cases a strip around the house may have to be left untreated, or treated in some other manner, or arrangements may be made for the people to vacate the premises for a suitable period of time. Sometimes, where an injurious material is concerned, the agricultural commissioner may make this a condition of the permit.

Does this application present any hazard to workmen in the treated area at the time of application? It is a poor excuse for a salesman to claim, after an accident, that he thought someone else was going to make certain that everyone was out of the orchard when treatment was made. If the premises have to be vacated, he should make sure everyone knows this.

Does it present any hazard to workmen, such as pickers, irrigators, thinners—and others, who may enter the treated area shortly after treatment? If there is a danger, the salesman should be sure the farmer knows of it. If the property requires posting, as for applications of more than 1 lb. of parathion, methyl parathion, or EPN per acre, he should be sure this requirement is known. More than 200 citrus pickers have been affected by residues of parathion and other organic phosphorus compounds this year in California.

Will remnants of the pesticide present any hazard to crops, workmen, children or livestock? If the material has any particular hazards, the salesman would do well to see that the farmer is aware of the danger and has not stored any remaining material where it might cause serious trouble later on. Storage of 2,4-D near seeds or fertilizer can cause heavy losses. Storage of remnants of sodium arsenite solution or parathion can cause injury or death several years later when children reach the material.

The Crop Presents Problems

Will application at this time impart excessive residue on the crop at harvest time? This problem is being partially solved by formalized pre-harvest intervals established for many pesticides on many crops. It should be realized that in most cases, these intervals have been whittled to the minimum for competitive purposes. Any further reduction may lead to trouble. A salesman should make sure the farmer understands what pre-harvest interval is needed for the pesticide he is using.

Is the proposed treatment acceptable to any processor or canner involved? A salesman may be in trouble if an application is contrary to conditions established by the processor or other prospective buyer of the crop. Late application of sulfur to tomatoes, for example, might be objectionable to canners.

Does the formulation contain any component that might be injurious in this application? Damages have been paid where a salesman forgot that the particular crop or variety was susceptible to injury by the pesticide he sold. Sometimes he has overlooked the fact that the sulfur diluent in the dust was distinctly injurious to certain melons, or the petroleum oil or solvent it contained spotted the bloom on plums, disfigured the petals on commercial flowers, or damaged the crop in some other way.

Will use of this material present any hazard to crops subsequently grown in the field? Application of benzene hexachloride to a crop can affect other crops grown on the field several years later. Off-flavor of potatoes from some areas has been attributed to the residue of BHC applied to previous cotton crops. Excessive applications of DDT and other persistent chemicals can build up detrimental residues in the soil that will affect growth of subsequent crops.

Miscellaneous Hazards to Be Considered

Will this application affect fish in the treated areas or in areas where irrigation water may drain? One of

(Turn to RESPONSIBILITIES, page 20)

SPRAY NOZZLE REFERENCE DATA
Yours for the asking!

TEEJET SPRAY NOZZLES with interchangeable orifice tips... write for Catalog 30.

TEEVALVE selector valve for booms... Bulletin 84.

GUNJET SPRAY GUNS for pressures to 800 p.s.i.—Bulletins 65, 69 and 80.

BOOMJET SPRAY NOZZLES for broadcast spraying... Bulletins 66 and 71.

PRESSURE RELIEF VALVES Bulletin 83.

SUCTION STRAINERS AND ACCESSORY EQUIPMENT Write for Bulletin 85 and Catalog 30.

SPRAYING SYSTEMS CO.
3214 RANDOLPH ST. BELLWOOD, ILLINOIS

'Public Relations Is Job for Everyone In Company,' Fertilizer Salesmen Told

By GEORGE H. SOULE*
Agricultural Product Information Specialist
Public Relations Department
E. I. du Pont de Nemours & Co.
Wilmington, Del.

One of the questions that is often asked of public relations people is what do public relations people do? Part of our job is simply to call attention, dramatically, to what may seem obvious to people who know the situation. Public relations is not just for specialists or for management in the home office. It's a job for all of us wherever we represent our companies.

Since the depression years of the 30's, winning and holding favorable public opinion has become one of the most important aspects of management in American business. No one company, and no one program can hope to do the job alone. We each have to do the job that we can best do in the place where we can best do it. The place where each company can be most effective is with its own employees, customers, suppliers, stockholders—and the people who live in its own plant towns.

Ideally, we would like to get our story across to all the 180,000,000 American people. But a lot of them just are not interested in anything that my company or yours has to say, either positively or negatively. However, each of us does have publics that are very much interested in what we have to say and what we do.

With this approach to public relations, you take areas of responsibility where you will be most effective—because you have a story to tell that people will listen to.

During this program for the past day and a half, you have been working toward bigger sales of fertilizer. Your objectives are bigger crop yields and more profit for farmers. As soon as you say "more farm production" then you become a public relations man yourself, because farm surpluses right now are one of the biggest problems for the American public. To many people, more farm production means higher taxes to subsidize farmers.

In other words, if this fertilizer school is successful, you will sell more fertilizer, to make more crops and create more public relations problems. What is the answer?

Part of the answer is to make more people aware of the situation as it has been summed up so well by Dr. Russell Coleman of the National Plant Food Institute. Dr. Coleman has stated that if today's farm output were produced by 1940 agricultural practices, the American consumers' food bill would be $13 billion higher than it is.

If you figure the federal farm program is costing $6 billion, then the American consumer is still $7 billion ahead each year.

However, as a representative of American business, speaking to you who also represent American business, I only wish that this saving could be accomplished through the means of private enterprise, rather than at the taxpayer's expense. But no one has figured out how to do this yet.

What I've said so far is sort of a weather report on the climate of public opinion in which we are doing business.

For the climate of public opinion we have something comparable to weather reporting services and barometers, not only in public opinion surveys and Gallup polls, but in the daily press and radio and television programs and in the attitudes and policies which we encounter in dealing with people and their elected representatives in local, state, and national governments. In the climate of public opinion, we have storms and turbulences, overcast periods and fair weather when we bask in the sunshine of public favor.

Barometers of agricultural public relations indicate we are now in an overcast period if not worse.

All of us who supply production goods are affected by these clouds on the horizon. As a result, we are looking for ways to deal with them.

Now let's analyze our title for a minute—". . . You, Your Industry and the Public."

First—who are you?

Two or three years ago Loretta Young starred in a television play in which she played a psychology student whose assignment was to go around asking people, "Who are you?" and then analyze the answers. The payoff, of course, came when she looked in the mirror and said to herself, "Who are you?" Try it sometime. Some people will answer with their names. Others will answer with their profession. You'd be surprised at the number of ways you yourself can answer this question.

Professionally you're fertilizer salesmen. Some of you may also be husbands, while others are single. Some of you may be golfers, while others prefer to go fishing. Some of you may be community leaders, while others take no part in community affairs or simply follow the leaders.

Now if you're thoroughly confused as to who you are, what is your industry? Well, of course, the answer is fertilizer. But where would the fertilizer industry be if it were not for agriculture? Aren't you also concerned with the industry of agriculture which consumes your product?

Then finally who are the publics involved in the public relations of your industry? Perhaps foremost among your publics are your customers — the farmers who buy your fertilizer. Then there is the business community in which you operate. Third are the legislators and the public officials. Last, but not least, comes the general public. Probably most of the general public remains ignorant of the fertilizer industry unless somebody's plant begins to smell bad.

And that's typical of a common approach to public relations. Wait until you have a problem and then try to deal with it. As a result most of the talks and articles that you read about public relations deal with problems.

I much prefer to think in terms of opportunities. It seems better to be recognized for the good job and good things you're doing rather than continually having to overcome unfavorable situations. You will get a lot more public sympathy when things go wrong, if you are generally recognized for doing the right things most of the time and getting credit for it.

The most effective communication within industry is done through the respected local representatives who are recognized as leaders in their own communities. This means you—you're the best public relations representative of your company. For example, if a high-flown statement on fertilizer industry policy comes out of NPFI in Washington, what does it mean to a North Carolina tobacco grower? Even if it comes out of Raleigh, it may not mean too much in Rocky Mount or Winston-Salem. But if one of these growers hears the same facts from you or from his local dealer whom he has come to trust, then there is a lot more chance that he will believe what he hears.

A company's real public relations department is every man and woman who works for it, and every contact he or she has with the people outside the company. When a good job is done by each person, then comes the second part of the job, to convince the public that this is the case. And deeds always count more than words.

Public opinion is made up of the opinions of individuals. It can only be changed by changing the opinions of individuals.

It appears to me that the chief public relations opportunity of the fertilizer industry and of American agriculture which it serves is to get credit for the good they are doing.

You have heard a great deal here on what a good buy a bag of fertilizer is in today's economy. The fertilizer price level has stayed well below the inflationary trend of most everything else. And today's farmer is buying the research, development and improvement that have gone into today's fertilizer.

According to the study by NPFI on farmers' attitudes toward the use of fertilizer, farmers consider the use of more fertilizer per acre as the top criterion in their judgment of a good farmer. Yet, farmers in the southeastern states could profitably use about twice as much fertilizer as they are using at present. How can it be that the old joke is still true? Farmers are still not farming half as well as they know how.

We consider that our agriculture is the most successful and productive the world has ever known. Most farm people have a standard of living as high as any city family can expect.

Yet farmers feel discouraged about their own future. They see large numbers of people going out of farming, and few coming in. They are condemned in the public press as parasites on the taxpayers. They certainly are not getting credit from the public for what they are accomplishing.

To overcome this pessimism, they need to get credit for the job they are doing.

Farming isn't dwindling away. Agriculture is still the biggest industry in the U.S. And it's a growth industry. Every morning agriculture has 8,000 new customers in this country alone as new babies are born. Farm assets total $187 billion—about the value of all the stocks of all industries represented on the New York Stock Exchange. Farmers have twice as much invested in machinery as does the entire steel industry—and five times as much as the automobile industry.

There is no other country on earth where the working man spends so small a proportion of his working day earning his food. Today he can earn a pound of bacon in a third of the time it took him in 1914, and many other foods in less than half the 1914 working time. So farm prosperity has not raised the real price of food. Output per agricultural worker has doubled since 1940. Agricultural research and education have raised farm incomes, and income opportunities in commercial agriculture.

Agriculture is a stronghold of the type of individual initiative and capitalistic enterprise that made this country great. American farmers through their efficiency and hard work have made it possible for millions of people to be released to other productive enterprises, and given your company and mine the basis for their success. This is the fundamental reason that the American standard of living goes so far beyond the physical necessities of life.

We consider the most prevalent type of farmer to be essentially a small businessman. He has only limited capital to invest in major innovations. He is swamped with more technological information and advice than he can use advantageously. Incredible as it may be to some people who were raised in cities and trained to think by industrial standards, many farmers farm because they want to farm and they will not always respond as we think they should to pure profit incentives.

In this respect, the farmer is more like the operator of any other small business, or like a professional person such as a lawyer, doctor or teacher, or creative person such as a musician, an artist or a writer. All these categories of occupations have one thing in common—generally the people engaged in them are so engaged because they want to do it.

Perhaps in considering agriculture in our economy, we are inclined to relate it too closely to business and industry, when it also has characteristics of the professional person's independence—and the kind of motivation that makes a musician keep on practicing or an artist keep painting or a newspaper man keep at his typewriter. These are all economic pursuits in which men are paid more for what they know than for what they do. They carry a high degree of individualism and a high degree of personal responsibility.

Other speakers have told you that the general public needs to be sold on what agriculture is. But first the farmer has to be sold on what he is and pride in his profession has to be restored.

Now let's get back to you. Getting back to one of our original questions—who are you? Let's look at you as salesmen first. Just like the profession of farming, the profession of selling has advanced considerably in prestige in recent years. Once it was no compliment to be called a salesman. Secretaries and housewives couldn't give a salesman the cold shoulder fast enough. Farmers would chase salesmen off the place with a shotgun.

But today, I'm told, things are different. I don't know how you make out with secretaries and housewives, but I'll bet it's a long time since any farmer has chased you off his place with a shotgun, or even turned the dog on you.

The salesman has become the focal point of our economy today. When an automobile salesman delivers the keys of a new car to a buyer, he is winding up the last of several hundred sales orders that have brought together the 8,500 parts and hundreds of talents represented in a modern automobile. At each step, from raw material to showroom floor, it was a salesman who brought buyer and seller together under conditions favorable to both.

It's estimated that there are 5,000,000 salesmen, and behind them there is a host of specialists and auxiliary services.

The technical age has caused a sales revolution. In today's economy a fertilizer salesman must offer more than a good product. You must offer, as well, the technology to go with it. Unless your customers know how to use the fertilizer profitably, you may make no further sales.

On top of your technical background, your profession demands that you know not only your own products, but also those of your competitors.

Selling is hard work, calling for

*The accompanying article was taken from Mr. Soule's speech, "Public Relations: You, Your Industry and the Public," at the merchandising school for fertilizer salesmen, Raleigh, N.C., Sept. 4, 1959.

substantial mental and physical energy. Competition is your unrelenting taskmaster.

With all this, you are also your company's public relations representative in your territory, and eyes and ears for management. To do this part of your job well, you have to know what is affecting the opinions and attitudes of the various "publics" you are concerned with.

Looking at public relations for your own industry in your own territory—are you acquainted with marketing conditions of your industry, with the supply situation, labor conditions, and social and economic trends?

Is industry moving in and farmers moving out, or is farming going downhill and nothing taking its place as a source of income for people who remain there?

The last census of agriculture was taken in 1954, and another one is coming up this year. Can you anticipate what this census will show for your territory? Will there be more farmers or less? What other changes are likely to show up? Particularly, is the average age level rising, or are there lots of young people and children? How about churches and local governments, and all the other elements of a healthy community — are they on the upswing or downswing?

Are crop patterns changing?

What kind of new construction is taking place?

How are farmers spending their money if they're not spending it for fertilizer? If they don't have any to spend, why don't they?

What kind of expansion is taking place in your community in either agriculture or industry? How much of it is being financed locally, and how much of it is dependent on outside capital?

How about taxes? Are they going up or down?

What books and magazines do you and your customers read? What newspapers, what radio and television programs exert the most influence—and in what direction?

You are covering your territory every day. You have a better opportunity than anyone in the home office to see how things are going and to report on things that need changing.

Above all, you have the best opportunity of anyone in your company to talk to people in their own terms. Although too often, we think of what appeals to us, rather than what appeals to the other fellow. And I'd like to wind up with the advice of an old fisherman on this point.

He says: "Don't bait your hook with steak because you like steak; bait it with worms—because fish like worms."

SAMPLE NECESSARY

BROOKINGS, S.D.—Paul Carson, South Dakota State College agronomist in charge of the soil testing laboratories, has advised farmers who expect to apply for Agricultural Stabilization and Conservation cost-sharing payments to help cover the cost of fertilizer applications next year should take soil samples this fall if it is at all possible.

He noted that the 1960 ASC docket specifically states that soil samples on these fields must be in by Feb. 1. And payment is to be made strictly on soil test results and the recommendations made by the soil testing laboratory.

He stated that some ASC County offices are providing men who will help farmers take samples for this purpose.

Farmers who are approved for ASC cost-sharing payments for fertilizer application will receive roughly 5¢ lb. for available plant food applied.

"This will pay for about 50% of the cost of applying available phosphorus or about one-third of the cost for applying nitrogen," he stated.

Drifting Insecticides 'Greatest Problem' For Crop Dusters, Says Veteran Flyer

FRESNO, CAL.—Air drift of insecticides to crops that aren't supposed to be treated is the greatest problem facing crop dusters.

This was reported by Henry C. Moore, veteran crop duster at a pesticide conference at the fairgrounds here Sept. 10.

"In most parts of California," he declared, "our agriculture is highly diversified, making it almost impossible to keep pesticides intended for one crop off others—this is especially true with dust formulations."

Mr. Moore pointed out that Tulare County, where he has operated a crop dusting service since 1945, has a rural population of nearly 100,000 —each a potential liability claim.

"When working an agricultural aircraft you are very fortunate if you are over a quarter-mile from a house, dairy barn, pasture or susceptible crop," Mr. Moore said.

"These conditions will not improve, but will become progressively worse as the population increases and people decide on suburban living."

As a result, dusters are forced to carry heavy insurance policies.

Restrictive legislation is another hazard faced by the agricultural pilots.

"Each session of the state legislature we see new bills aimed at putting us out of business or seriously curtailing our activities," he said.

"In future years, we expect to be accused of causing smog.

"I know of an eye, ear, nose and throat specialist who blames all the trouble he can't account for on agricultural chemicals."

Mr. Moore urged agriculturalists attending the session to put themselves in the pilot's position.

"In the last few years," he said, "many dust applications have been converted to spray with results at least as good.

"Don't fight this trend. Encourage it.

"As required by state regulation, a pilot can substantially confine spray, pellets or granular materials to the field being treated.

"You all know that this is impossible with dust."

He urged that farmers give instructions to the pilot concerning insecticide application, but stressed that they avoid the kind received by one pilot this summer who was told:

"Use a heavy airplane and fly fast."

Spencer Adds Five to Sales, Service Staff

KANSAS CITY, MO.—The addition of five men to the sales and technical service staff of Spencer Chemical Co.'s agricultural chemicals division has been announced by Ray White, general sales manager. Three of the new men will be assigned sales territories, while the other two will be technical service representatives, Mr. White said.

The new additions are: Richard R. Redle, who will become Michigan sales representative, reporting to Spencer's north central district office in Chicago; Donald C. Mitchell, who will become Oklahoma sales representative, reporting to Spencer's southwest district office in Kansas City; Julian F. Holloway, who will become Arkansas sales representative, reporting to Spencer's mid-south district in Memphis; Edward J. Hallacy, who will become a technical service representative in the southwest district, and Hubert L. Balay, who will become a technical service representative in the northwest.

Books on Pesticides

THE GARDENER'S BUG BOOK (1956)

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound $7.50

HANDBOOK OF AGRICULTURAL CHEMICALS —Second Edition

Lester W. Hanna, Agricultural Enterprises, Forest Grove, Ore.

As the title implies, this book contains broad information and tables on not only the chemical products themselves, but also on toxicity, residues, registration, terminology and emergency treatments. A fold-out chart gives compatibility data on numerous materials for formulators. Information on fertilizers includes soil elements, trace minerals, and application techniques. Descriptive material is also presented on fumigants, fungicides, herbicides, systemics, growth modifiers, livestock chemicals, rodenticides, and antibiotics. Information on materials and techniques is written fully with illustrations and tables. 490 pages..... $5.95

INSECT PESTS OF FARM, GARDEN and ORCHARD—Fifth Edition (1956)

Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages $8.50

DDT and NEWER PERSISTENT INSECTICIDES

T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatability of DDT with other insecticides, fungicides and additions are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations $8.50

PESTS OF STORED GRAIN AND GRAIN PRODUCTS

Richard T. Cotton, Stored Product Insect Section, U.S. Department of Agriculture, Washington, D.C.

Dr. Cotton's valuable book is full of practical up-to-date information on the problems of insect and rodent contamination. Some of the main topics covered are: methods of detecting contamination in cereal from rodents, birds and insects; prevention and control of insect infestation in grain; new methods of storage; methods of sanitation in grain storages and processing plants; the latest information on fumigation; heat sterilization; and protection of stored seed. This book is concise, readable, completely indexed and includes over 100 figures and illustrations. 306 pages, 8½x5½", photo offset, illustrated, cloth bound.... $4.00

METHODS OF TESTING CHEMICALS ON INSECTS—Vol. I

Harold H. Shepard, chief, Agricultural Chemicals Staff, Commodity Stabilization Service, U.S. Department of Agriculture, Washington, D.C.

This is Vol. I of a proposed three-volume study. It describes methods of studying the effects of chemicals on the physiology of insects. Also covered are general techniques for applying chemicals to insects. It includes laboratory screening methods for determining the killing efficiency of insecticidal sprays, dusts and fumigants. Its 14 chapters are authored by prominent entomologists from USDA and State Experiment Stations. 355 pages; 8½x5½" photo-offset, cloth bound $5.00

THE CHEMISTRY AND ACTION OF INSECTICIDES

Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 504 pages $10.50

ADVANCES IN PEST CONTROL RESEARCH—Vol. 2

Edited by R. L. Metcalf, University of California, Citrus Experiment Station, Riverside, Cal.

This book, an annual series, treats pest control as a distinct discipline, discussing chemical, physical and biological methods from the common viewpoint of the basic principles involved and applying them to the control of weeds, fungi, bacteria, insects—all organisms which compete with man for his food supply, damage his possessions, or attack his person. Each annual volume contains chapters contributed by outstanding scientists having intimate knowledge of various pertinent topics within the field, presenting not only comprehensive reviews of recent advances but also critical evaluation of new developments and concepts. This volume continues the same plan which won immediate acceptance for the series. In eight chapters, a group of experts present and interpret recent advances in subjects ranging from the innate toxicity of fungicides to isotope dilution techniques and the spread of insecticide resistance, 1958; 434 pages, 110 illustrations, 43 tables $12.50

INSECT, FUNGUS AND WEED CONTROL

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful $10.00

Order From Croplife

Reader Service Department
P.O. Box 67
Minneapolis 40, Minn.

(enclose remittance)

RESPONSIBILITIES

(Continued from page 17)

the biggest storm of complaints in recent years followed wide-scale application of dieldrin to rice which contaminated drainage water and killed fish in spectacular numbers.

Will this application present any hazard to wildlife? Improper use of pesticides can kill wild fowl, deer or other wildlife.

What effect will the application have on the beneficial predator and parasite insects? Beneficial insects might be an important consideration that should not be overlooked. Sometimes the role they are playing requires selection of a different pesticide or of a dosage or timing different from one that would otherwise be used.

Will application contaminate irrigation or drainage water and injure other plantings or animals? Transportation of insecticides and herbicides by water has resulted in damage to other crops and to livestock.

Will empty containers be disposed of in a proper manner? Failure to dispose of emptied containers can cause serious damage, injury and even death. Leaving full or emptied containers unattended where they present a hazard may lead to criminal complaint against the responsible persons. A careful salesman will properly advise farmers and operators about proper disposal. Cans and glass containers should be crushed and buried. Usually paper containers should be burned promptly, while avoiding the smoke, but 2,4-D is an exception. Burning 2,4-D containers can cause wide-spread damage because the chemical can be volatilized in the heat and drift for long distances. The salesman should recommend what is a proper container disposal method for each material he sells.

Will this material cause a contamination problem in the application equipment? Many damage suits have been based on contaminated equipment, particularly equipment involving 2,4-D.

The Neighbors

Suppose a pesticide salesman has carefully considered each one of these questions and secured the full cooperation of the farmer and the operator to make certain that no complaint arises from any of these causes. Perhaps one might think he could rest easy and confident that he had done a good job and met his responsibilities in full. Not so! In fact some of the most perplexing and the most costly of objections raised about applications in recent seasons have come from persons not even mentioned yet in this article—the neighbors.

No application of a pesticide should be made until adequate consideration has been given to the surrounding area and the possible hazards that might be presented to persons and property in it. Some of the types of trouble commonly encountered may be illustrated by the following questions:

Is this application likely to annoy nearby people because of noise, odor, dust or spray? A noisy airplane operating near a subdivision at daybreak on a Sunday morning can result in a deluge of complaints and demands for restrictive legislation. When vapors of a soil fumigant escaped during the night into neighboring homes, alarmed residents called the sheriff's office, fire department, county health department, air pollution office and the chemical warfare section of a nearby Marine Base.

Is this application apt to scare livestock or poultry on nearby property? Regardless of the chemical nature of the pesticide involved, noisy, spectacular operations, such as application by aircraft, can frighten horses into hurting themselves seriously on fences, cause turkeys to break their legs and wings, cause dairy cattle to drop in milk production, and cause hens to stop laying.

Will possible drift of this pesticide present a hazard to children, workmen, or other people on neighboring properties? Allowing a dust or spray, particularly of an injurious material, to drift onto children in a school yard, to a utility crew working in a neighboring field or to a housewife hanging up her washing, may be inexcusable and sometimes warrant criminal as well as civil action. When sprays or dusts have carelessly been allowed to drift across highways and into passing cars, frightened and indignant people have written to the governor demanding corrective action.

Will possible drift of this pesticide present any direct hazard to livestock or neighboring properties? Drift of TEPP dust has promptly felled cattle on a field next to the one being treated. Chloropicrin used as a soil fumigant escaped from the treated field and collected in neighboring, low-lying property, where it drove out residents and killed a number of chickens. Drift of dusts and sprays into herds of cattle or into barns has been charged with causing loss of milk, loss of weight and abortion of calves.

Will possible drift of this pesticide present any hazard to honeybees on neighboring fields? Even though bees are not working in the treated field, severe losses may occur if the pesticide drifts onto neighboring hives or crops or even onto neighboring weeds in bloom.

Will possible drift of this pesticide cause economic losses of beneficial insects on neighboring crop plants? If a citrus grower is paying to liberate predator or parasite insects on his trees, he is understandably concerned if they are wiped out by drift of parathion from neighboring tomato fields.

Will possible drift of this pesticide injure neighboring crop plants? Drift of dusts containing sulfur has been charged with serious damage to cantaloupes. Drift of weedkillers and defoliants has caused obvious injury to trees and other plants. Drift of toxaphene and other pesticides has killed fish and frogs in commercial ponds. Fumes of volatile 2,4-D hormone sprays have drifted from treated citrus groves into neighboring tomato fields and affected the fruit. As in the next question to be considered, sometimes the nature and condition of neighboring crops will dictate choice of a pesticide or timing of an application. For example, a tomato field infested with rust mite was surrounded by fields of cantaloupes. The customary sulfur dust could not be used because of the danger of drift onto the cantalopes, which are sensitive to sulfur. In this case, the tomatoes were treated satisfactorily with parathion. It seems paradoxical but there are circumstances such as this one when parathion is safer than sulfur. Each case must be considered separately.

Will possible drift of the pesticide impart any detrimental residue on neighboring crops? This question has been reserved for the last because it is the one that has been of most concern to everyone during recent months. The hazard is particularly acute if the neighboring crop is close to harvest, if the pesticide is a persistent one, or the pesticide has no tolerance or a zero tolerance on the neighboring crop. Drift of DDT, toxaphene, or a similar pesticide onto hay or pasture can be economically disastrous. It might render the hay or forage unfit for sale and, even more costly, if the contaminated material is inadvertently fed to dairy cows, it might cause condemnation of all the milk from a dairy herd for a prolonged time. Mere traces of DDT, for example, on feed are concentrated in milk and no measurable residue of any pesticide is permitted in milk. Tests have shown that it is possible to apply a spray to a crop without permitting any drift across one fence line if it is done carefully, using the right equipment and the right formulation under the right weather conditions and during the right airflow. However, the slightest error can cause significant drift and contamination. Selection of a suitable pesticide in a given instance should be made only after the probability of drift and its consequent hazard has been fully assessed. Sometimes proximity of another crop requires selection of another and less effective pesticide than would otherwise be used, to avoid the very serious hazard of drift.

What Is a Salesman's Responsibility?

Reviewing, it seems obvious that no one can expect the pesticide salesman to make certain that all these problems have been solved adequately in every application of the pesticides he sells. It seems natural to expect that the farmer will be aware of some of them and take care of them, and that the pest control operator will be aware of others and take care of those. However, a salesman cannot safely assume that the farmer or the pest control operator is fully aware of all the characteristics or hazards inherent in the pesticide he sells. **It is the responsibility of the salesman to make certain that they do know.** Unless he examines the crop and property to be treated, and the surrounding crops and properties, and carefully evaluates not only the treatment he recommends but also the probability of trouble arising from the application, and properly informs the others, he may be astonished to find how complex and how extensive are the responsibilities of a pesticide salesman.

Richard C. Oswant

ADVERTISING HEAD — Appointment of Richard C. Oswant as manager of advertising for Columbia-Southern Chemical Corp., wholly-owned subsidiary of Pittsburgh Plate Glass Co., has been announced by Michael J. Batenburg, director of information services. Mr. Oswant succeeds James C. Plunkett who had served as manager of advertising for Columbia-Southern and Pittsburgh Plate's fiber glass division, prior to his recent appointment as full-time advertising manager for the fiber glass division. Mr. Oswant formerly served as editor of Columbia-Southern "Chemicals" magazine during the past three years, however he will continue as editorial director of the external publication.

AUTO VICTIM

WINONA, MINN.—Edward Fleming, 41, sales manager of the direct selling division of McConnon & Co., Winona, Minn., was killed Oct. 10 in an auto accident. Mr. Fleming had been with the McConnon organization 13 years.

Paul Zimmer Named To Cyanamid Position

NEW YORK—Paul R. Zimmer has been appointed a field investigator for the agricultural division of American Cyanamid Co., New York.

Paul R. Zimmer

According to Dr. W. P. Johnson, manager of Cyanamid's animal industry field development department, Mr. Zimmer will be assigned to the Midwest region, with headquarters in Kansas City. Prior to joining the company, Mr. Zimmer was a research technician at the University of California, specializing in animal nutrition. He obtained his B.S. and M.S. degrees at South Dakota State College.

KHAPRA BEETLE

(Continued from page 1)

cated the entire population of beetles, Mr. Fryer said. He added that since this incident, the ship has made another round trip to Europe and back to Cleveland. Meticulous inspection of its holds the second time revealed no sign of the pest.

Mr. Fryer said that the cargo on board at the time of finding the Khapra beetles comprised mostly miscellaneous freight of non-foodstuffs nature, although one shipment of chocolate bars was on board. It was not damaged by the beetles at all, Mr. Fryer reported.

The discovered presence of Khapra beetles in the Midwest underlines the potential threat of not only this pest, but others which might enter the central portion of the U.S. via the St. Lawrence Seaway. Mr. Fryer said that every precaution is being taken in Cleveland, as well as at all other ports of entry, to prevent introduction of new insect pests, or reinfestation of those already present in this country.

The pesticide trade is well acquainted with the Khapra beetle, particularly on the West Coast and in Arizona and New Mexico where large scale fumigation efforts have been made in the past to eradicate the pest from stored grain.

Adult beetles are small, and pale red-brown to dark brown in color. They thrive best in relatively high temperatures, with the optimum being between 90° and 99°. Larvae can resist temperatures as low as 14° for brief periods.

The pest is a native of India, but is now spread throughout the world and causes great losses to stored grain. Not only does it contaminate stored grain from a sanitation standpoint, but it leaves quantities of barbed hairs which are said to be a serious menace to humans if swallowed.

The insect itself is not materially more resistant to fumigants and residual insecticide sprays than are many other stored grain pests. However, it is still more difficult to control because of the habit of larvae crowding into spaces in the structure of buildings and bins, where it is difficult to reach them with sprays or fumigants.

The establishment of quarantines to restrict movement of grain between areas where the beetle is known to exist and those thought to be free from the pest is regarded as one means of controlling the spread of the insect.

Entomologists in the past have warned that the transportation of infested grain, feed, or seed in railway boxcars can result in the wholesale contamination of the rolling stock of the country, with the danger that infestation could spread throughout the country.

WACA

(Continued from page 1)

than ever before, said Justus C. Ward, chief of USDA's pesticide branch, Washington, D.C. The label is the best source of information and the most explicit guide to proper usage, he said. If the product is properly labelled it then becomes the user's responsibility to avoid the hazards. Mr. Ward then explained that USDA attempts to insure that the user will be completely informed. The user must know the rules in order to avoid possible trouble with the food and drug administration by neglecting, through ignorance or otherwise, the residue tolerance established for protection of the consumer. Mr. Ward also briefly outlined the new amendment to the federal insecticide act passed by Congress in August, covering four new categories of chemicals for registration and control: Nematocides, growth regulators, desiccants, and defoliants. Penalties against mishandling of these products will become effective after next March 5, he said.

The extent of a manufacturer's liability for injuries resulting from misuse can be limited to some extent by proper labelling, reported Newton E. Davis, of the legal department of Shell Chemical Co.

Although the applicator may be liable for negligent handling, the manufacturer may be held to account in the law courts if proper warnings and instructions regarding use are not included on the label. He cited several instances of oversight by the manufacturer, who was held responsible for resulting damage.

Misrepresentation by a salesman despite the label may also cause the supplier to be held accountable, Mr. Davis said. He pointed out that it had been established that oral warning took precedence over written instructions.

If a label is lost during transit, the supplier can also be held accountable for damage from use, he added.

The 250 delegates from all of the western states were shown the USDA motion picture, "The Hidden Menace," a documentary film to inform the public of the continual fight by USDA to keep insects from gaining entry into agricultural areas through various means of importation, and how chemicals are used to reduce the loss from such attacks.

Four speakers reviewed in turn the changing marketing picture of the industry and interior administrative problems.

The formulator-distributor is becoming increasingly important in the marketing pattern, according to Robert S. Thompson, whose Kansas City firm operates in this capacity. The local formulator-distributor is able to give better service than can his large national competitor because he is closer to his market and is better able to understand the needs of his customers.

He described the formulator-distributor as "the key link in the distribution chain." He condemned consignment selling as being a greater demoralizing influence in prices than any other marketing practice.

H. F. Tomasek, president of Chemagro Corp., Kansas City, believes that the merchant is replacing the salesman in chemical merchandising. He described the salesman as being interested chiefly in selling the product, without particular regard to cost and profit. The merchant, on the other hand, considers the broader picture of costs. This becomes increasingly important in view of the high cost of introducing new products, estimated variously up to $2 million; 50% higher than just five years ago.

A panel discussion on the marketing aspects of agricultural chemicals was postponed until the March meeting of WACA in Santa Barbara.

George W. Weldon, Velsicol Chemical Corp., Berkeley, Cal., was elected president of WACA to succeed Ivor Burden, United-Heckathorn, Richmond. George Poppic, Coastal Chemical Co., Oxnard, Cal., was named vice president. C. O. Barnard will continue as executive secretary of the group.

JULY SULFUR REPORT

WASHINGTON—The domestic sulfur industry produced 312,192 long tons of native sulfur and 53,636 tons of recovered sulfur during July, 1959, reported the Bureau of Mines, U.S. Department of the Interior. Producers' stocks of native sulfur decreased from the previous month, and at the end of July, totaled 4,008,018 tons.

McConnon & Co. Sells Majority Interest to Five-Man Business Group

WINONA, MINN. — The majority interest in McConnon & Co., Winona, Minn., manufacturing chemist, has been sold by the James and H. G. McConnon families to five Winona businessmen.

Richard G. Vickery, formerly president of Knight & Bostwick, Newark, N.Y., has been named vice president-general manager.

All common stock formerly held by the McConnon families has been acquired by the five-man group which has, at the families' request, served as the corporation's board of directors since a reorganization of the management in 1956.

The five, all of whom have served without compensation the past three years are: B. A. Miller, president, Miller Waste Mills; E. H. Finkelnburg, chairman board of directors, Mississippi Valley Public Service Co.; J. H. Baker, president, Baker Shoe Co.; F. O. Gorman, president, the Gorman Co.; and George E. Kelley, executive vice president, Bay State Milling Co.

McConnon & Co. was organized in 1899.

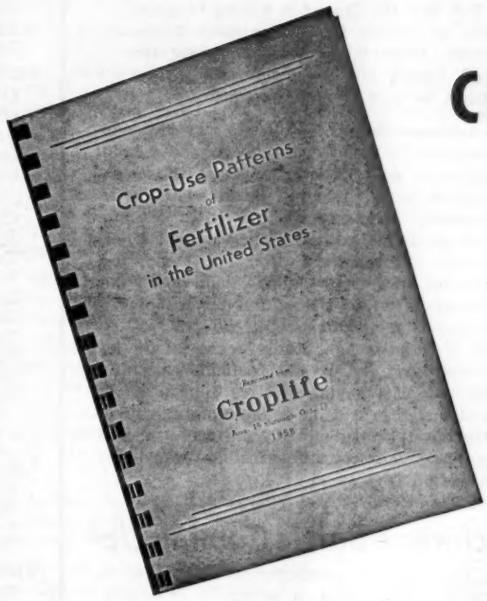
The dealer division was the mainstay of the company until shortly before World War II when, with its Mackwin division, the company expanded into agricultural chemicals.

B. A. Burquest is sales manager of the Mackwin division.

CONTRACT AWARDED

CINCINNATI, OHIO — Vulcan-Cincinnati, Inc., engineers and builders of chemical and petrochemical plants and equipment, has been awarded a contract to engineer and equip a 100-ton-a-day urea plant to be built at Calgary, Alberta, for Consolidated Mining & Smelting Co. of Canada, Ltd. The urea will be used mainly in manufacture of nitrogen fertilizer and animal feed supplements.

You'll get a better understanding of the fertilizer market from this valuable new book



Crop-Use Patterns

of

Fertilizer

in the United States

by

J. R. ADAMS L. B. NELSON D. B. IBACH

U.S. DEPARTMENT OF AGRICULTURE

This significant report was compiled by the U.S. Department of Agriculture after thorough studies of fertilizer use in the United States. Crop-Use Patterns covers questions which, until now, have not been adequately answered. Crop-Use Patterns is based on information gathered from every fifth farm surveyed in the most recent U.S. Census . . . providing a broad base of national information.

Some of the questions answered are:

what portions of croplands receive fertilizer
how fertilizer is used among major crops
how much acreage for each crop is fertilized

Specific fertilizer uses analyzed are:

Corn, Tobacco, Wheat
Oats, Cotton, Potatoes
All Crops and Cropland Pasture
Hay and Cropland Pasture

All graphically presented with 33 maps and numerous charts.
You'll want your own personal copy of Crop-Use Patterns. And you'll want to keep it handy where you can easily refer to its wealth of practical information about the use of fertilizer.
To obtain your copy of Crop-Use Patterns, fill in and mail the coupon below . . . the supply is limited.

Only $2.00
Order Today

Croplife 2501 Wayzata Blvd. Minneapolis 40, Minn.

Please send ..... copy(ies) of Crop-Use Patterns of Fertilizer in the United States

$2.00 per copy

Name .....
Address .....
City ..... Zone .....
State .....

Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

Right or Wrong . . .

'Blame the Salesman' Is Users' Battle Cry When Things Go Wrong in Control Program

THE SOBERING responsibilities of the pesticide salesman and his key role in attaining sensible and effective use of various toxicants is pointed out exceptionally well in an article found elsewhere in this issue, by Robert Z. Rollins, chief of the bureau of chemistry, California Department of Agriculture.

It all adds up to the fact that placing responsibility for either credit or blame is a difficult thing to do in the case of agricultural pesticides, since there are so many factors involved. Not many people rush about trying to find someone to thank when the insecticide, fungicide or weed killer has done its work well, but let some unfortunate incident occur, and the air fairly reverberates with the sound of invectives, dire threats and frequently angry action of some kind.

It is natural, we suppose, for the pesticide salesman or the company he represents, to be the "fall guy" when something goes wrong. Maybe it is a drift situation. Perhaps it is real or imagined contamination of some kind involving livestock, wildlife, or a neighbor's crop. Whatever the difficulty, the finger points to the salesman, and the pesticide user asks him, "How come?"

Actually, as Mr. Rollins points out, the salesman plays a particularly important role in agricultural pest control. He is looked upon as being an authority in the use of pesticides, and usually his training warrants such confidence. He is expected to know what the material will not do as well as what it will do and we can't think that a knowledgeable salesman who expects to stay in business very long, will withhold from a customer any pertinent information concerning the product about to be used.

Still, it is impossible for the salesman or anyone else to foresee every possible hazard. Changes in temperature, wind velocity or in other conditions beyond control may create conditions under which application is unwise. The salesman may point out every possible instruction regarding safe handling and application, and still the farmer or applicator may find some new way to get into trouble. Some people are known to possess an almost infinite capacity for this type of thing.

Aside from the questions concerning actual control of the pest at hand, the person making a recommendation (frequently the salesman) must consider a whole group of miscellaneous hazards. Will the application kill fish if the irrigation water drains into populated streams? Will deer, waterfowl and other wildlife be harmed through the proposed application? How about the effect of the toxicant on bees, beneficial predators and parasitic insects?

Thus a big factor arises . . . that of neighbors, be they wildlife or people who may take a dim view of the whole proceeding. The truculent attitude of many residents along the East Coast regarding airplane spraying of large area to control gypsy moth is an illustration. (Many have since changed their tune since encephalitis-bearing mosquitoes have become a problem in some areas.)

How is the salesman to appraise the total situation when it comes to the neighbors? Can he determine, short of knocking on doors, whether someone on one of the adjacent farms may be allergic to the slightest sniff of dust or odor from sprays? Is it his responsibility to foretell that a plane operating efficiently over the property of farmer A may cause a stampede and consequent injury among farmer B's livestock?

The panic resulting from any little incident connected with pesticides is a sight to behold. Mr. Rollins tells about one occasion when vapors of a soil fumigant escaped during the night into neighboring homes, causing the residents great alarm and precipitating immediate calls for help. The householders called the sheriff's office, the fire department, the county health department, the air pollution office and the chemical warfare section of a nearby Marine base. Confusion reigned. Possibly everyone cussed the salesman.

Still, there is no doubt about the fact that the salesman does carry a heavy load of responsibility. He can't afford to shrug it off and indulge in any kind of irresponsible suggestions. In most cases, the crop being protected is a valuable one as indicated by the fact that the grower is willing to spend money to protect it. By the same token, however, there is no assurance that the grower knows how to handle the potent material he buys from the company.

The salesman simply can't assume anything in his instructions to the user. He must make certain that the buyer does know fully about the characteristics or hazards inherent in the pesticide. If it is unusually toxic and requires extra precautions, this should be explained and re-emphasized. If volatility and drift are problems, these, too should be discussed. Instructions should go all the way through, even to telling the buyer how to dispose of empty containers with safety.

Well, if farmers and others could know the complicated job faced by the pesticide salesman in seeing that a safe and effective application is made and that the goods he sells accomplish their task, there would undoubtedly be more understanding and a more charitable feeling toward him and his work in the world.

Witchweed Battle Coming Up

ALTHOUGH ITS proximity to Hallowe'en is merely coincidental, a group of entomologists and plant pathologists from the two Carolinas expect to engage in a "witch hunt" at the end of October to seek ways to control witchweed, the parasitic plant which plays havoc with a number of valuable crops including corn, sorghum, sugar cane and other plants of the grass family.

The operation is completely serious, however. A battle has been going on for the past three years . . . ever since the weed was identified in eight counties of the Carolinas in 1956. Since then, it has been reported in 14 North Carolina counties and seven in the Pee Dee section of South Carolina. It is imperative that the weed's progress be stopped.

Participating in the discussions on control methods will be federal and state researchers, control and regulatory personnel. They will consider action programs and review progress thus far in attempts to either control or eradicate the weed.

As many in the pesticide field know, witchweed is not to be taken lightly. Each plant can produce from 50,000 to 500,000 seeds so small and light that they may be distributed by wind, water and soil on shoes or wheels. Seeds may lie dormant in the soil for as long as 20 years waiting for a host to set its life cycle in motion.

Thus far, experiments have been made along cultural lines in an attempt to make the seeds germinate without the presence of a host plant on which they might thrive. Thus the witchweed dies without producing more seed.

Croplife's Home Office

Croplife®

BPA — *Member of Business Publications Audit*

NBP — *Member of National Business Publications*

CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is $5 for one year ($8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG
Editor

DONALD NETH
Managing Editor

EDITORIAL STAFF — John Cipperly, Washington Correspondent; George E. Swarbreck, Canadian and Overseas Editor; Emmet J. Hoffman, Marketing Editor; James L. Engfer, Editorial Assistant.

ADVERTISING STAFF—Wilfred E. Lingren, Advertising Director; Carl R. Vetter, Advertising Department Manager; Bruce A. Kirkpatrick, Advertising Production Manager; R. Dale Swenson, Promotion Manager.

BUSINESS STAFF—Martin E. Newell, Chairman of the Board of Directors; Milton B. Kihlstrum, President and Treasurer; Wilfred E. Lingren, Executive Vice President; Don E. Rogers, Vice President; Paul L. Dittemore, Vice President; Donald Neth, Secretary; T. A. Gaden, Circulation Manager; James G. Pattridge, Assistant Treasurer; Richard Ostlund, Office Manager; Walter O. Buchkosky, Production Superintendent.

BRANCH OFFICES

EASTERN STATES—Paul L. Dittemore, Manager; James W. Miller and George W. Potts, Advertising Sales Representatives; Suite 3214, 551 Fifth Ave., New York 17, N.Y. (Tel. Murray Hill 2-2185).

CENTRAL STATES—Don E. Rogers, Manager; Henry S. French, Assistant Manager; Amos W. Standish, Advertising Sales Representative; 2832 Board of Trade Bldg., 141 W. Jackson Blvd., Chicago 4, Ill. (Tel. Harrison 7-05/5).

SOUTHWEST—Martin E. Newell, Manager; Thomas E. Letch, Assistant Manager; 612 Board of Trade Bldg., Kansas City 5, Mo. (Tel. Victor 2-1350).

NORTHWEST—Paul A. Anderson, Advertising Sales Representative, P.O. Box 67, Minneapolis 40, Minn. (Tel. Franklin 4-5200).

WASHINGTON CORRESPONDENT — John Cipperly, 604 Hibbs Bldg., Washington, D. C. (Tel. Republic 7-8534).

EXECUTIVE AND EDITORIAL OFFICES — 2501 Wayzata Blvd., Minneapolis, Minn. Tel. Franklin 4-5200. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

Published by
THE MILLER PUBLISHING CO.
2501 Wayzata Blvd., Minneapolis, Minn.
(Address Mail to P. O. Box 67, Minneapolis 40, Minn.)

Associated Publications—The Northwestern Miller, The American Baker, Farm Store Merchandising, Feedstuffs, Milling Production.

Nov. 9-10—California section, American Society of Range Management annual meeting, University Room, Shattuck Hotel, Berkeley, Cal.

Nov. 15-19—American Society of Agronomy, Cincinnati, Ohio.

Nov. 19—General Livestocks - Crops Field Day, University of Arizona, Yuma, Ariz.

Nov. 24—Rutgers' Pesticide Dealers Conference, College of Agriculture Campus, Nichol Ave., New Brunswick, N.J.

Dec. 2-3—Indiana Fertilizer Conference, Memorial Center, Purdue University, Lafayette, Ind.

Dec. 7-11 — Nebraska Fertilizer Institute anhydrous ammonia workshops, Dec. 7, Lincoln, Neb.; Dec. 8, Hastings, Neb.; Dec. 9, Ogallala, Neb.; Dec. 10, Kearney, Neb.; Dec. 11, Columbus, Neb., Agricultural Ammonia Institute cooperating.

1960

Jan. 12-13 — Nebraska Fertilizer Institute annual convention, Pershing Auditorium, Lincoln, Neb.

Jan. 21—Northeast Region, National Plant Food Institute fertilizer sales promotion workshop, Hotel Hershey, Hershey, Pa.

Meeting Memos listed above are being listed in this department this week for the first time.

Oct. 19-23—Fertilizer Section, National Safety Council, annual meeting, Chicago.

Oct. 21-23 — National Agricultural Chemicals Assn., 26th annual meeting, French Lick-Sheraton Hotel, French Lick, Ind., Lea S. Hitchner, executive secretary.

Oct. 26-27—Aerial Sprayers and Dusters Conference, Hotel Chinook, Yakima, Wash.

Oct. 27—Seventh Annual Grassland Farming Conference, Extension Service, Rutgers University College of Agriculture, New Brunswick, N.J.

Oct. 29-30—Far West Safety School, Hacienda Motel, Fresno, Cal.

Oct. 29-30 — Eastern Branch, Entomological Society of America, Chalfonte-Haddon Hotel, Atlantic City, N.J.

Oct. 30—North Dakota Fertilizer Dealers Conference, North Dakota Agricultural College, Fargo.

Nov. 3-4—Michigan Insecticide-Fungicide Conference, Michigan State University, East Lansing, Mich.

Nov. 4-5—Fifth Annual Oklahoma Fertilizer Dealers and Crops and Soils Conference, Stillwater, Okla.

Nov. 4-6—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C. Dr. Vincent Sauchelli, National Plant Food Institute, chairman.

Nov. 8-10—National Fertilizer Solutions Assn., Annual Convention, Statler Hilton Hotel, St. Louis; Muriel F. Collie, 2217 Tribune Tower, Chicago 11, executive secretary.

Nov. 9—South Carolina Plant Food Educational Society annual meeting, Clemson House, Clemson, S.C.

Nov. 9-11 — California Fertilizer Assn., 36th annual convention, Fairmont Hotel, San Francisco.

Nov. 12-13 — Southwest Fertilizer Safety School, Tropicana Motor Hotel, Pasadena, Texas.

Nov. 16-20 — National Aviation Trades Assn., 20th annual convention, New Orleans, La.

Nov. 17-20 — Packaging Machinery Manufacturers Institute Show of 1959, The Coliseum, New York City.

Nov. 30-Dec. 4—27th Exposition of Chemical Industries, New York Coliseum, New York City.

Nov. 30-Dec. 5—Joint meeting, Entomological Society of Ontario; Entomological Society of Canada and Entomological Society of America, Hotel Sheraton-Cadillac, Detroit, Mich.

Dec. 1-2—Annual meeting, Carolinas-Virginia Pesticide Formulators Assn., Carolina Hotel, Pinehurst, N.C.

Dec. 2-3—Annual Missouri Fertilizer Conference, Columbia, Mo.

Dec. 7-10—Central Canada and North Central Weed Control Conferences, Royal Alexandra Hotel, Winnipeg, Manitoba, Can.

Dec. 9-11—International Crop Protection and Pest Control Exhibition, Seymour Hall, St. Marylebone, London, England.

Dec. 10—Iowa Fertilizer Promotion Workshop, Savery Hotel, Des Moines, Iowa.

Dec. 10-11—Annual Arkansas Plant Food Conference, Little Rock, Ark.

Dec. 10-11—Arkansas Plant Food Conference, Lafayette Hotel, Little Rock, Ark.

1960

Jan. 5-6—Annual Texas Fertilizer Conference, College Station, Texas.

Jan. 6-8—14th Annual Meeting, Northeastern Weed Control Conference, Hotel New Yorker, New York City.

Jan. 13-14—Pesticide School, North Carolina State College, Raleigh, N.C.

Jan. 13-15—Ninth Annual Convention, Agricultural Ammonia Institute, Statler Hilton Hotel, Dallas, Texas.

Jan. 14-16—10th Annual Convention of the Agricultural Aircraft Assn., El Mirador Hotel, Palm Springs, Cal.

Jan. 20-21—North West Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore., C. O. Barnard, executive secretary.

Jan. 20-22—Thirteenth Annual Southern Weed Conference, Buena Vista Hotel, Biloxi, Miss.

Jan. 25-26—Second Annual Agricultural Pesticide Conference, Purdue University, Lafayette, Ind.

Jan. 25-27—Cotton States Branch, Entomological Society of America, DeSoto Hotel, Savannah, Ga.

Jan. 27-29—Symposium on Chemistry of Phosphate-Soil Reactions, Muscle Shoals, Ala.

Jan. 28-29—Annual meeting of the Colorado Agricultural Chemicals Assn., Cosmopolitan Hotel, Denver, Colo.

Feb. 2-4—Pest Control Operators' School, North Carolina State College, Raleigh, N.C.

Feb. 8-9—Southwestern Branch, Entomological Society of America, Hilton Hotel, El Paso, Texas.

Feb. 11-12 — Midwest Agronomists-Fertilizer Industry meeting, Edgewater Beach Hotel, Chicago, Ill.

March 23-25—North Central Branch, Entomological Society of America, Schroeder Hotel, Milwaukee, Wis.

June 13-18—National Plant Food Institute annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 27-29—Pacific Branch, Entomological Society of America, Davenport Hotel, Spokane, Wash.

July 13-15—Eleventh Annual Fertilizer Conference of the Pacific Northwest, Hotel Utah, Salt Lake City; B. R. Bertramson, State College of Washington, Pullman, Wash., chairman.

July 27-29—Great Plains Agricultural Council, 1960 meeting, Laramie, Wyo.

BRUSH AND WEED KILLERS

KILL BRUSH at low cost with amazing R-H BRUSH RHAP. Will not injure grasses, grains; not poisonous. For free information write Reasor-Hill Corporation, Box 36CL, Jacksonville, Ark.

KILL SUBMERSED WATER WEEDS which foul up motor propellers, tangle fishing gear, with R-H WEED RHAP-20, Granular 2,4-D. Inexpensive, easy to use, sure results. For free information write Reasor-Hill Corporation, Box 36CL, Jacksonville, Ark.

MR. CORN FARMER: Control broad leaved weeds and grasses (crab grass, fox tails) with R-H WEED RHAP-20, Granular 2,4-D. For free information write Reasor-Hill Coorporation, Box 36CL, Jacksonville, Ark.

CALENDAR FOR 1959-60

OCTOBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

NOVEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

DECEMBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JANUARY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

FEBRUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29					

MARCH

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

APRIL

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

JULY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

SEPTEMBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $11 per column inch.

All Want Ads cash with order.

FOR FAST ACTION AND RESULTS try

Croplife's

CLASSIFIED ADVERTISING

Professor Retires

BERKELEY, CAL.—John P. Conrad, professor of agronomy at the University of California, Davis, retired Oct. 1 after 38 years of service.

Mr. Conrad expects to leave this month for a two-year assignment in Panama City, where he will be curriculum adviser to a new college of agriculture at the University of Panama. His position will be a joint one under a contract between the I.C.A. and the University of Tennessee Bureau of Public Administration.

INDEX OF ADVERTISERS

The index of advertisers is provided as a service to readers and advertisers. The publisher does not assume any liability for errors or omissions.

Allied Chemical Corp., Nitrogen Div. ...
American Potash & Chemical Corp. .....
American Potash Institute .....
Armour Agricultural Chemical Co. .....
Ashcraft-Wilkinson Co. .....

Baker, H. J., & Bro. .....
Bemis Bro. Bag Co. .....
Broyhill Company, The 13

Chantland Mfg. Co. .....
Chase Bag Co. 13
Chemagro Corp. .....
Coddington, E. D., Mfg. Co. .....
Collier Carbon & Chemical Corp. .....
Commercial Solvents Corp. .....

Davison Chemical Co. .....
Deere, John, & Co. .....
Diamond Alkali Co. .....
Dorsey Trailer .....
E. I. du Pont de Nemours & Co., Inc..... 3
Duval Sulphur & Potash Co. .....

Eastern States Petroleum & Chem. Corp. ..

Gaddis Bros. Mfg. Co. .....
Grace Chemical Co. .....
Grand River Chemical Div. of Deere & Co.

Harshaw Chemical Co. .....
Hercules Powder Co. 24
Highway Equipment Co. .....
Hough, Frank G., Co. .....

International Minerals & Chemical Corp. .....
Iowa State Fertilizer Institute .....

Kent, Percy, Bag Co. .....
Kraft Bag Corp. .....

Meredith Publishing Co. .....
Meyer, Wilson & Geo., & Co. 11
Mid-South Chemical Corp. .....
Mid-States Machinery Co. .....
Miller Chem. & Fert. Corp. .....
Miller Publishing Co. 15
Monsanto Chemical Co. .....

Naugatuck Chemical Div., U.S. Rubber Co.
Niagara Chemical Division .....
Northwest Nitro-Chemicals, Ltd. 7

Olin Mathieson Chemical Corp. .....

Penick, S. B., & Co. 8
Pennsalt of Washington Division, Pennsalt Chemicals Corp. .....
Phillips Chemical Co., a subsidiary of Phillips Petroleum Co. .....
Potash Company of America .....
Power Curve Conveyor .....
Progressive Farmer .....

Reasor-Hill Corp. 23

Sackett, A. J., & Sons .....
Simonsen Mfg. Co. .....
Sinclair Chemicals, Inc. .....
Smith-Douglass Co., Inc. .....
Smith-Rowland Co., Inc. .....
Sohio Chemical Co. .....
Southern Nitrogen Co. .....
Southwest Potash Corp. .....
Spencer Chemical Co. .....
Spraying Systems Co. 17
Standard Oil Co. .....
Successful Farming .....
Swift & Co. .....

Tennessee Corp. .....
Texas Gulf Sulphur Co. .....

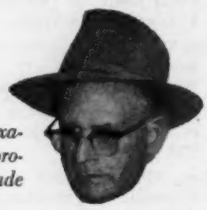
Union Bag-Camp Paper Corp. 5
U.S. Phosphoric Products Division .....
U.S. Potash Co. .....
U.S. Rubber Co., Naugatuck Chemical Div.

Witco Chemical Co. .....

THESE MEN HAVE LEARNED FROM EXPERIENCE THAT TOXAPHENE MAKES DOLLARS...AND SENSE

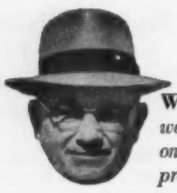
Hartford Jackson, Columbia, La. *"I set about the best cotton crop I have ever seen, following the toxaphene, toxaphene-DDT control program . . ."*

P. E. Cloutier, Bermuda, La. *"We set one of our best crops last year, and we think the toxaphene, toxaphene-DDT insect control program was a big factor. We're basing our 1959 program on the same plan . . ."*



D. L. Hall, Eudora, Ark. *"The toxaphene and toxaphene-DDT control program certainly worked for me, and made me money . . ."*

Morris A. Roberson, Gilliam, La. *"I like the early production and early harvest that comes with the toxaphene insect control program. We had good control all season, and I plan to use the same program this year . . ."*



W. E. Moore, Sherrill, Ark. *"We were able to pick cotton two weeks earlier on the acreage where we followed this program. It really paid off for us . . ."*

Clarence R. Smith, Cleveland, Miss. *"We believe in this program. It gave us excellent insect control, saved us money, and helped us make a cotton crop under adverse conditions . . ."*

H. C. Bradney, Montrose, Ark. *"This program saves me expensive late-season applications and does an excellent job. Last year I cut my insect control costs in half . . ."*

O. L. Garmon, Jr., Marks, Miss. *"I used the toxaphene program on more than 700 acres of cotton. I know you need to get the overwintered boll weevil, and this program does that. I had good insect control all year . . ."*

O. L. Cox, Ruleville, Miss. *"I got on the toxaphene program early in the season and continued on a regular schedule. I believe those six early applications paid more dividends than anything we did with our cotton crop all year long . . ."*

Insecticide salesmen have to do more than just take orders for dusts and sprays. In the Mid-South, for example, progressive formulators and dealers are showing cotton farmers how a planned, season-long insect control program based on toxaphene can be the most satisfactory—and profitable—practice. These statements from farmers already following such a program reflect the growing interest in more effective use of insecticides.

NX59-8

TOXAPHENE

A product of the Agricultural Chemicals Division
HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington 99, Delaware